DOCUMENT RESUME

ED 245 727 JC 840 343

AUTHOR Bannister, Deborah; Greenhill, Craig
TITLE 1983 Outlook Report.
INSTITUTION British Columbia Inst. of Technology, Burnaby. Office of Institutional Planning.
REPORT NO 01P 1013
PUB DATE 18 Mar 83
NOTE 146p.; Table 18 may be marginally legible due to poor type quality. For the 1984 Outlook Report, see JC 840 344.
PUB TYPE Reports - Descriptive (141) -- Statistical Data (110) -- Viewpoints (120)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS College Planning; *Demography; *Economic Factors; *Educational Trends; *Employment Patterns; Futures (of Society); *Labor Relations; Long Range Planning; Population Trends; *Postsecondary Education; Prediction; Public Policy; Statewide Planning; Technical Institutes; *Technological Advancement; Trend Analysis; Two Year Colleges
IDENTIFIERS *British Columbia

ABSTRACT

Designed to aid in the process of long-range planning at British Columbia Institute of Technology (BICT), this "Outlook" report presents information, analyses, and projections concerning conditions and trends likely to affect the college in the coming years. The report's eight sections focus on demography, economics, the labor force, national policy, provincial policy, the postsecondary educational system, technological trends, and labor relations. Each of the sections identifies salient trends, comments on projections, and draws conclusions illustrating implications for BCIT planning. Highlighted projections include: (1) a negative economic outlook and high unemployment for 1983; (2) an increased demand for BCIT's technological programs and a modest increase in the college's enrollments; (3) a rapidly aging labor force and a decline in labor force growth; (4) the need for increased national investments in education and training; (5) the need for increased budgetary restraint at the provincial level; (6) the need to develop more cost-effective, innovative, and flexible programming in the postsecondary system; (7) an increase in job displacement as new technologies are developed and utilized, and the consequent need for massive retraining of the workforce; and (8) labor relations characterized by prolonged bargaining processes. (HB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

BCIT

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

3700 WILLINGDON AVENUE, BURNABY, BRITISH COLUMBIA, CANADA V5G 3H2 AREA CODE 604 434-5734

ED245727

1983 Outlook Report

(Project 1031)

Deborah Bannister

Craig Greenhill

1983:03:18

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Craig Greenhill

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

X Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

JC 840 343

OFFICE OF INSTITUTIONAL PLANNING

This is a staff study. The contents of this report may have no official Institute Status. The views expressed are those of the author(s) and do not necessarily represent Institute or O.I.P. statements of policy.

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

BCIT

INTER OFFICE MEMO

5906 St-16

TO Gordon Thom
President

FROM Craig J. Greenhill
Director
Institutional Planning

DATE 83:03:15

Project 1031

Re: 1983 Outlook Report

This second "Outlook" report examines recent trends in several areas external to the Institute which have significant implications for planning at BCIT. The 1983 report builds on the implications identified in the first outlook and reviews new data and analysis published at both national and provincial levels to draw conclusions with respect to BCIT.

In part, the report uses material identified by the Planning Documentation Committee established by the Council of Principals and the Ministry of Education.

I would be pleased to discuss any aspects of the report or its conclusions and to pursue any related questions which may arise. In particular, I would welcome suggestions which would enhance the usefulness of future editions of the Outlook.

C. J. Greenhill

Craig J. Greenhill

CJG/lr

Attachment

SUMMARY OF CONCLUSIONS

DEMOGRAPHY

1. The demand for B.C.I.T.'s technological programs will continue to increase for both full-time and part-time studies. Depending upon the Institute's capacity, enrollment should grow modestly in the short term, escalating in the medium to long term.

2. The participation of female students is projected to steadily increase, most notably in the part-time student population.

3. As long as proximity to home remains a significant factor in selection of a post-secondary institution, the lower mainland will be the primary student catchment area. Until economic recovery decreases the importance of proximity, the lower mainland is projected to grow as the principal source for students.

4. The decline in enrollment of recent Grade XII graduates is projected to continue in the medium term, with an increasing proportion of full-time students enrolling after a period of employment.

5. Part-time enrollment can be expected to increase in direct proportion to the application of technological advancements in the workplace.

6. The full and part-time student populations are projected to continue to age in the medium term.

ECONOMICS

1. The short-term outlook, through the first half of 1983, is negative for all segments of the economy.

2. Interest rates must fall and remain below 10% in order for recovery to occur. Governments must exert pressure to effect this change and must ensure stabilization once achieved. Increases in production expenditures, and employment, all necessary factors of economic growth, are contingent upon a decrease in real interest rates.

3. Unemployment will continue to be a pervasive problem for B.C. in 1983.

4. The forestry, metal and mining industries will remain depressed in the short-term.

5. B.C. has the potential and is projected to lead economic recovery in Canada by 1984.

LABOR FORCE

1. Labor force growth will continue to decline, reflecting a marked slowdown in the growth of the source population. Even increases in participation rates will not be strong enough to counter the trend of slowing population growth, though participation increases will contribute to maintaining labor force growth above population growth.

2. The demographic composition of the labor force is in a state of change. It is aging rapidly, as is the population, with fewer new entrants. Participation has increased for women and youths, but these groups are precisely those whose unemployment rates are higher than average. Policies and programs are needed to accommodate the specialized training needs of youthful entrants and the retraining needs of women in low demand traditionally female occupations.

3. Unemployment has become a widespread social and economic ailment, climbing to unprecedented post-depression levels. Concurrently, the employment base has declined and productivity has stagnated. Recovery will be dependent upon increased utilization of labor and material resources, thereby increasing productivity and returning output to its potential level.

4. The labor market is characterized by the coexistence of skill shortages and joblessness. The most critical shortages in the managerial and professional category are in the scientific and engineering fields. This imbalance is expected to compound over the next decade due to rapid technological advancement.

5. Within the post secondary educational system, colleges and institutes are more responsive than universities to the needs of the labor market. By incorporating program flexibility these institutions can assist in minimizing skill shortages of the future through targeted vocational training. This has important implications for BCIT in that most of its technological programs are directly related to the provision of skills in critical shortage areas.

NATIONAL POLICY

1. The continuous growth of the Canadian economy has been determined to be dependent upon the timely development of the skills and knowledge of the labor force. Accordingly, the national post-secondary education objective regarding employability is to promote a capacity which is responsive in providing skill training in critical occupations. Skill shortages are primarily manifested in those occupations involving the application of technological skills.

2. The National Training Act in B.C. targets provincial colleges and institutes as the training source. Having repealed the 52 week limit, this enables BCIT to participate as a provider of training for occupations of national importance. Interimly designated occupations of relevance include almost the entire spectrum of programs within the Engineering Division as well as the Computer Systems and Operations Management programs of the Business Division. In the Health Division Biomedical Electronics, in particular, is anticipated to be designed in the near future. Due to the relationship between BCIT's curricula and skills required for designated occupations, the Institute should be able to participate in the N.T.A. depending upon its ability to accept new students. Participation in the Skills Growth Fund component could benefit the Institute by providing support for the establishment or improvement of facilities, equipment and/or programs.

3. The decline of productivity in the Canadian economy has emphasized the crucial importance of science and technology to economic growth. This is evident throughout the Federal government's economic development policies and programs, wherein research and development activities have received priority consideration. The government has, in effect, challenged the education and training system to meet the skill needs of the evolving "high tech" economy. This challenge has yet to be supported by increased levels of funding for education. The National Training Act alone is not sufficient to provide for the training needs of the Canadian labor market. It is necessary for the government to examine closely its investment in the future and increase its support in proportion to the magnitude of the task. If education and training is to be an essential priority, then this should be reflected in the fiscal appropriation and allocation process. Response is contingent upon capacity, and capacity is contingent upon adequate support.

PROVINCIAL POLICY

1. Provincial policy, whether for education or economic recovery, emphasizes the recurrent theme of budgetary restraint. Though future funding levels for technological education have yet to be established, it can safely be assumed that substantial increases will not be forthcoming through conventional channels.

2. An obvious priority that has been assigned to the post-secondary education system is the provision of training to fill areas of critical skill shortages, particularly in technological fields. Information on skill shortages and needs is proposed to be used as the basis for determining educational program priorities. BCIT's ability to maintain its responsiveness to labor market requirements through the development of new and innovative training programs will determine the strength of the Institute's position within the

provincial post-secondary education system. The capacity to implement priority programs in a short time frame could have substantial implications for future funding.

POST-SECONDARY SYSTEM

1. The college and institute system in B.C. is being challenged to respond to significant changes. National and provincial policy emphasize that educational program priorities should be based on fulfilling the occupational skill needs of the economy. Meanwhile, fiscal policy remains exceedingly restrictive and greater attention is being paid to both accountability and cost-effectiveness. Plainly, the system is being asked to do more with less, requiring innovative approaches and flexible programming.

2. Changes are being proposed in both the organizational structure of the system and in the method of allocating funds. A single council structure has been recommended for the purpose of coordinating and streamlining the allocation process. It is not known whether this would enhance or detract from BCIT's role in providing specialized technological training since no office within the Ministry or the council structure has the responsibility to promote technological education.

3. Interest in formula funding continues to be expressed. Since qualitative aspects are not taken into consideration while equitability is, this could adversely effect BCIT's funding level due to the higher cost of Institute programs.

TECHNOLOGY TRENDS

1. Canada cannot afford to forgo the productivity gains promised by the microelectronics revolution. Canada's future as an internationally competitive force is contingent upon its adaptation of the new technologies. The degree to which the nation is successful will depend upon its ability to meet the technological skill needs of the future and to adjust to a rapidly changing information society. Training and education are the primary vehicles by which these objectives can be attained.

2. While skill shortages are already manifest in the new technologies, job displacement will occur at an increasingly rapid rate in sectors with labor intensive activities. Massive retraining of the impacted segments of the labor force will be required to correct this imbalance.

3. Educational institutions need to re-examine their curricula and priorities in order to respond to society's needs for large numbers of highly trained technologists. Software skills are currently in great demand, and the demand will grow for graduates who can program individual applications as well as design systems.

LABOR RELATIONS

1. The wage restraint program and the recessionary economy have resulted in generally lower wage settlements. Concern is shifting more toward job security than large salary increases.

2. Negotiations with BCIT unions will continue into 1983. Wage issues will be difficult to resolve, resulting in a prolonged bargaining process.

TABLE OF CONTENTS

	Page
SUMMARY OF CONCLUSIONS	i
TABLE OF CONTENTS	vi
INTRODUCTION	1
DEMOGRAPHY	2
ECONOMICS	39
LABOR FORCE	50
NATIONAL POLICY	64
PROVINCIAL POLICY	85
POST-SECONDARY SYSTEM	109
THE NEW TECHNOLOGY AND ITS IMPLICATIONS	118
LABOR RELATIONS	133
BIBLIOGRAPHY	136

INTRODUCTION

The identification of important trends or potential changes in the environment of the Institute is a vital part of planning. The purpose of this report is to bring together published information and analysis concerning several classes of variables in the environment and draw conclusions about their implications for B.C.I.T. It is intended as a reference document for long range planning in that it identifies opportunities which may be exploited and constraints which may require adjustment or efforts at avoidance. The report emphasizes trends, student body characteristics and possible demands in the general policy environment.

The Outlook Report is divided into eight sections, each dealing with an important aspect of organizational life in British Columbia:

Demography
Economics
Labor Force
National Policy
Provincial Policy
Post-Secondary System
Technological Trends
Labor Relations

Each section identifies some salient trends, comments on projections and draws conclusions which illustrate the implications for BCIT planning.

DEMOGRAPHY

A. National Trends[1]

Population - Age/Sex/Composition

Between 1976 and 1981 Canada's population increased by 5.9% to 24,343,181. The greatest rate of increase was in the rural population, up 8.9%. The urban population had a lower percent of increase, at 5%, indicative of some outward migration from urban centres to more rural residences.

The Canadian population continued to age relatively rapidly. The median age increased from 27.8 years in 1976 to 29.6 years in 1981, with minimal difference between the sexes. The population of 5 to 13 year olds was lower in 1981 than it was in either 1961 or 1971.

The male population increased at a slower rate overall than the female population, maintaining the trend of a slightly female-dominated population. Males under 55 years of age were in the majority while females aged 55 and over were in the majority. Therefore, the female-dominant trend can be partially attributed to the higher mortality rates for males at earlier ages than females.

The median age of the urban population (30.1) exceeded that of the rural population (28.2) by 1.9 years.

1. Statistics Canada, 1981 Census of Canada, Population - Age, Sex and Marital Status, Cat. No. 92-901 (Vol. 1 - National Series)

The proportion of Canadians of working age remained consistent at two-thirds of the population. For the remaining population (one-third non-working), 22.5% was under 15 years of age, while 9.7% was 65 and over.

Since 1981 census data on immigration, interprovincial migration and fertility will not be available until 1983, it is not possible to determine the influence these variables have had on population changes.

Projections/Implications

At the current rate of aging, the median age of the Canadian population will approach 37 years by 2001. The non-working elderly population will become increasingly female. The proportion of young is expected to continue to decline in the short term, while projected to begin an upward trend by the mid-1980s. Post-secondary education will not feel the effect of this increase until the turn of the century. Nevertheless, full-time non-university post-secondary enrollment is projected to increase slowly in the short term, (averaging +.5% per year),with a slightly (51%) female dominant population.[2]

---

2. Statistics Canada, Trends on Canadian Education, 1961-62 to 1983-84, Education, Science and Culture Division, September 1982.

B. Provincial Trends[3]

Population - Age/Sex/Composition

British Columbia's population increased at the rate of 11.3% between 1976 and 1981, for an absolute gain of 277,859 persons. This rate of increase was second only to Alberta (up 21.7%) and almost double that of the nation. B.C.'s rural population increased by 17.4% while the urban population increased at the slower rate of 9.6%. This was consistent with the national profile though British Columbia's rate of growth was substantially higher, maintaining B.C.'s historically high growth level.

The difference between urban and rural population growth rates is even greater for metropolitan Vancouver. In the entire metropolitan area, the population increased by 8.7%. Within this area, the urbanized core experienced a 7.7% rate of increase in population while the population of the fringe areas increased by 19.4%. Once again, this is potentially indicative of outward migration from the more expensive city centre to outlying bedroom communities. During times of economic downturn, cost of living factors contribute heavily to this type of migration.

British Columbia relies on immigration for population growth, since its birth rate (14.92) is below the Canadian average (15.46).[4] In 1981/82

3. Statistics Canada, 1981 Census of Canada, Population - Geographic Distributions, British Columbia, Cat. No. 93-910 (Vol. 2 - Provincial Series).

4. Financial and Economic Review, Ministry of Finance, Province of British Columbia, 42nd edition, August 1982.

B.C.'s estimated net migration from other provinces was down significantly from the previous year - from 37,900 in 1981 to a projected 6,300 in 1982. Concomitantly, total net migration to B.C. (foreign and domestic) decreased by 63%, from 51,047 in 1981 to 18,703 in 1982. This reduced migration can be attributed to a deceleration in economic activity and employment growth.

British Columbia maintained its status as the oldest province, with a median age of 30.9 years. This was an increase of 1.8 years between 1976 and 1981, identical to that of the nation. Young adults aged 20-29 comprized the greatest percent of the provincial population in 1981.

Also consistent with the national trend was the higher rate of growth for the female population than for the male population. In 1976 the sex distribution in B.C. was approximately equal but by 1981 females had a slight majority.

Population distribution within the younger age groups are of relevance to post secondary educators. Accordingly, the size of these sub-populations in British Columbia and in the Greater Vancouver Regional District are provided in Table 1. Notable was the high growth of the population aged 25 - 34. Not only did young adults comprise the largest segment of the population but were also the most rapidly growing group.

TABLE 1

Population and Age Distribution

British Columbia and G.V.R.D.
1976 to 1981
(Thousands)

	BRITISH COLUMBIA				GREATER VANCOUVER REGIONAL DISTRICT			
	Total	15-24	25-34	35-49	Total	15-24	25-34	35-49
1976	2467	459	396	415	1085	200	180	191
1981	2744	491	490	481	1170	207	214	215
% Change	+11.2	+7.0	+23.7	+15.9	+7.8	+3.5	+18.9	+12.6
- - - PROJECTED (B.C. Only) - - - - - - - -								
1986	2929	461	515	584				
1991	3286	462	568	710				
1996	3712	504	610	836				
2001	4168	596	643	935				
% Change 1981-2001	+51.9	+21.4	+31.2	+94.4				

* Projections Not Available for GVRD.

Source: Statistics Canada, 1976 and 1981 Census of Canada, Population - Age and Sex, Cat. Nos. 91-520 and 92-901

Central Statistics Bureau, Ministry of Industry and Small Business Development, British Columbia Population Projection 9/82 1981-2006, September 1982.

Figure 1:
Population and Age Distribution in B.C. and G.V.R.D.
1976/1981

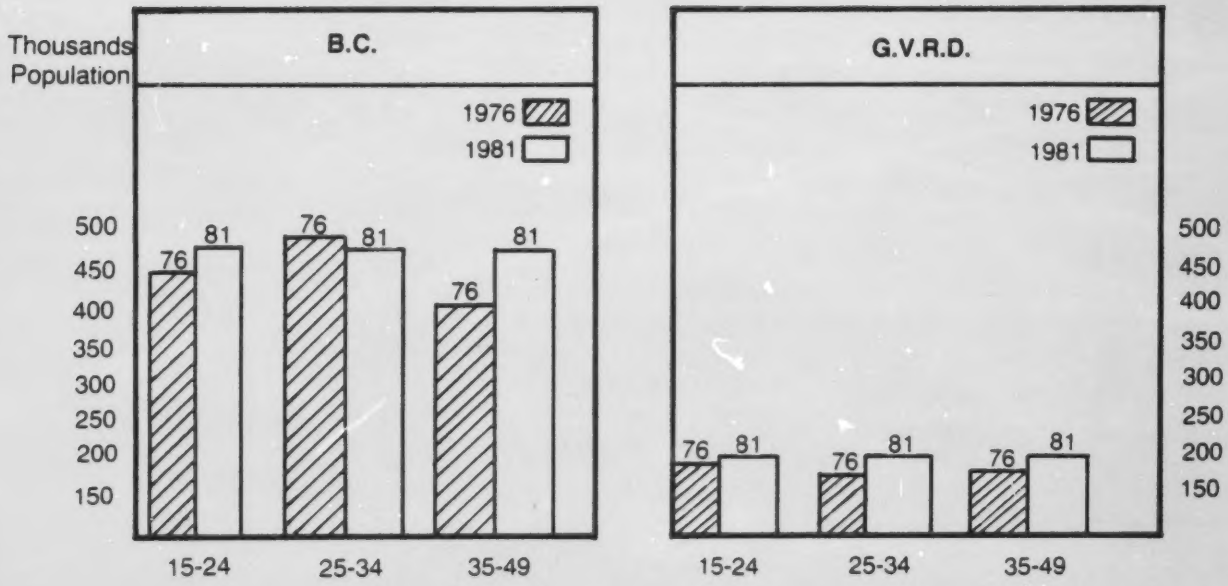


Figure 1 Source: Table 1

OIP 1031
82:12

Grade XII students are another target population of interest to educators. Since 1977, grade XII enrollment has been slowly declining throughout the province (Table 2), with the exception of a slight increase in 1979. The greatest decrease to date occurred in 1981, with further decreases projected through 1984. Nevertheless, a reversal of this trend is expected by 1986 wherein substantial increases in enrollment are projected.

Grade XII enrollment in the lower mainland has decreased at a significantly more rapid rate than in the province - over 3 times as much in the past 5 years. Proportionately, the lower mainland accounts for approximately 50% of all grade XII enrollments (Table 3), though its share has been decreasing in comparison to the remainder of the province. Those trends are also projected to continue into the mid-1980s.

TABLE 2

SEPTEMBER GRADE XII ENROLLMENT BY B.C. REGION

1976-1986

Year	Lower Mainland	Total Province
1976	19,170	35,919
1977	19,267	36,954
1978	18,955	36,618
1979	18,744	36,792
1980	18,811	36,705
1981	17,998	36,189
- - - - - - - P R O J E C T E D - - - - - - -		
1982	16,827	34,110
1983	15,613	31,484
1984	15,225	30,743
1985	15,293	31,307
1986	16,407	33,136

Notes: Source: Trend Analysis of Enrollments - (preliminary tables); 1981 Enrollments, B.C.F.C., 82:11:22

Lower Mainland includes the following college regions: Vancouver, Douglas, Kwantlen, Capilano and Fraser Valley

TABLE 3

SEPTEMBER GRADE XII ENROLLMENT DISTRIBUTION

BY B.C. REGION

1976 - 1986

Year	Percentage		
	Lower Mainland	Vancouver Island	Other B.C.
1976	53.4	18.8	27.8
1977	52.1	19.0	28.9
1978	31.8	18.6	29.6
1979	50.9	19.3	29.8
1980	51.2	18.5	30.3
1981	49.7	19.0	31.3
- - - - - - - P R O J E C T E D - - - - - - -			
1982	49.3	18.6	32.1
1983	49.6	18.6	31.8
1984	49.5	18.4	32.1
1985	48.8	18.6	32.6
1986	49.5	18.2	32.3

Notes: Source: Trend Analysis of Enrollments (preliminary tables), 1981 Enrollments, B.C.F.C., 82:11:22

Lower Mainland includes: Vancouver, Douglas, Kwantlen, Capilano and Fraser Valley.

Vancouver Island includes Camosun, Malaspina and North Island

OIP 1031
82:12

10

Projections/Implications

Over the next twenty years the population of British Columbia is projected to more than double, increasing by 1,423,170, from 2,744,500 in 1981 to 4,167,670 in 2001 (See Table 1).[5] The annual growth rate is expected to remain moderate, averaging slightly less than two percent per year through 1991. Natural increase will account for 61% of the total increase in population between 1981 and 1986. This trend is projected to reverse, with net migration progressively accounting for a larger proportion of population increase than natural increase. Between 1981 and 2001 69.2% of the cumulative population increase will be attributable to net migration. Annual natural increase will slowly decline from a high of 23,423 in 1988 to a low of 20,235 in 1999. Annual net migration will go from a current low of 1,596, rapidly increase in the mid-1980s, reaching a high of 73,341 by 2001. Due to the highly variable nature of migration, actualization of these projected increases is dependent upon such factors as economic conditions, age structure of the population and federal policies on foreign migration.

The population of the Greater Vancouver Regional District is projected to increase by 160,000 by 2001.[6] Two-thirds of this growth is expected to occur in the 1980s. The population of the GVRD will continue to grow at a slower rate than the provincial population. The annual

5. Central Statistics Bureau, Ministry of Industry and Small Business Development, British Columbia Population Projection 9/82 1981-2006, Government of British Columbia, September 1982.

6. Greater Vancouver Regional District Planning Department, Greater Vancouver Growth Prospects Trends and Forecasts, October 1982.

growth rate of the GVRD is anticipated to decline from .7% annually in the 1980s to .5% annually in the 1990s. Natural increase is expected to increase slowly in the 1980s, then decline again in the 1990s. Migration has historically accounted for between 50% and 80% of the total growth of the GVRD population. During 1982 there has been a net outflow of families, attributable to the recession. Immigration is expected to increase in direct proportion to economic growth.

The provincial population is projected to continue to age relatively rapidly, with the median age increasing to 32.8 years by 1991 and to 34.2 years by 2001. The percent of the population under 20 years of age will steadily decline during the next twenty years, from 30.2% in 1981 to 28% in 2001. The percent of the young adult population (20-34) will decline by 5% while the percent of the middle aged population (35-50) will increase by 5% by 2001. The number of elderly will progressively increase.

In the GVRD, the number of middle aged adults (35-50) will nearly double during the next 20 years. Conversely, the number of young adults (20-35) will decline slightly while the number of children is expected to remain at present levels. Consistent with the province and the nation, the number of elderly is projected to slowly increase.

The female population in B.C. will maintain a slight, but declining, majority over the long term. In the short term the male population will continue to experience a lower growth rate. By 1991 this trend should reverse itself, with the male population increasing at a higher rate

during the subsequent ten years. Females will continue to constitute the majority of the elderly population.

Continuing shifts in the structure of the province's population require changes to social and economic programs and services. The changing age structure, in particular, affects the level of demand for services and has a dramatic effect on requirements for educational programs. It is essential that an awareness of demographic trends be maintained in order to ensure effective program planning, responsive to the shifting needs of the province's population.

B.C.I.T. STUDENT PROFILE

A. Profile Studies

In 1981 three research projects were conducted which provided information on the profile characteristics of B.C.I.T. students and the educational plans of Grade XII students. Though each study was conducted by separate organizations for unique purposes, their findings provide descriptive data on the current and future consumers of BCIT's technological programs.

1. A Profile Study of Students Entering Career/Technical Program in the British Columbia Community Colleges and Institutes [1]

On behalf of the Academic Council of British Columbia, B.C. Research undertook a major province-wide study of students in career/technical programs in order to produce a data source intended to serve as a basis for future planning. The study involved students who were being admitted to a career/technical program for the first time in September 1981, and included 17 colleges and provincial institutes in British Columbia. Analysis of responses of B.C.I.T. students only are provided herein, in order to formulate an Institute profile.

The B.C.I.T. sample consisted of 4,381 full and part-time students, including both first year level students and first-time, full-time students. All questionnaires were administered in class in September 1981. Approximately one-third of those responding were full-time students (1,372).

---

1. Forrester, G., Jones, G. and Dennison, J., B.C. Research, Appendix Report #1, Information Sheet Responses by Institution/BCIT, #5-04-982, February 1982.

and the remaining two-thirds responding were part-time night-school students (2923). Slightly more females (50.9%) responded than males (48.4%). Roughly 80% of the full-time respondents were under 25 years of age while the part-time respondents were predominantly aged 25 and over.

Summary of Results

- Over half the respondents (57.2%) were employed full-time the year before, with 79.2% employed in some capacity in preceeding 12 months. Only 7.6% came directly from secondary school. Over 10% had bachelor degrees. In interpreting these results it should be remembered that the majority of respondents were part-time/night students.
- Of those previously employed, the main job held was clerical, followed by sales positions.
- One third indicated a definite relationship between their main job before enrolling and the program or course in which they just enrolled.
- Almost 80% (79.2%) came from a lower mainland residence, with 85.7% not changing residence to enroll.
- Main reasons for enrolling in program were to improve existing job skills (27.7%) or to qualify for a job (20.8%).
- Two thirds planned to complete the entire career/technical program on either a full or part-time basis.
- Three quarters cited their educational goals as obtaining vocational skills.
- 85% chose BCIT because of either institute (57.8%) or teacher (27%) reputation. 31.9% stated because it was close to home.
- 58% planned further education in their field.
- Three quarters plan to work after completing the program.
- One third hoped to find full-time employment in the lower mainland after completing the program.

2. Marketing Strategies for Recruitment at B.C.I.T.[2]

In September, 1981 a Task Force was established to develop marketing strategies for the day school component at the Institute. In order to determine what factors influenced the current student population to come to BCIT, a questionnaire was designed and administered to all day students in class. The responding sample consisted of 2905 students or approximately 75% of those actually registered.

Summary of Results (N.B. - data is presented as percentage of responses, not respondents, since multiple answers were frequently permitted)

- Students learned about BCIT primarily from friends (27.9%), followed by high school counsellor (16.2%) and previous BCIT graduate (13.6%).
- BCIT's reputation was the most influential factor in selecting BCIT (21.9%), followed by short, intensive programs (16%) and wanting a specific job or career (15%).
- Personal motivation was the most important factor in helping students come to BCIT (47.8%) followed by increased job opportunities (31.4%).
- The greatest barrier to coming was cited as a lack of adequate finances (35.8%).
- The majority of students had made fairly long range decisions concerning coming to BCIT, with over 69% deciding at least six months before applying.
- Before coming to BCIT the respondents were primarily working (36.9%) or in high school (32.7%). The remainder were college or university transfers (28.5%), with only a few unemployed or homemakers (1.8%).
- The majority of students came from the lower mainland (70.18%).

2. Lloyd, G.N. et al, Task Force on Marketing Strategies for Recruitment at B.C.I.T., BCIT February, 1982

3. Plans and Profile Characteristics of Grade 12 Students in British Columbia, 1981[3]

The British Columbia Forecasting Committee initiated studies on the educational/occupational plans of Grade 12 students in B.C. in 1975, 1976 and again in 1981. The 1981 study is an expanded version of the previous surveys which further examines selected variables that influence the decisions of students about further education. The analysis is based on the educational plans of Grade XII students for September 1981. Over 13,500 B.C. Grade XII students in 71 schools were surveyed in April 1981, with 12,062 or 78% responding. 35.5% of these respondents were from the lower mainland college regions.

Summary of Results

- Over 60% of B.C.'s 1981 Grade XII students predicted that they will not continue with post-secondary education, with almost half intending to seek full-time employment.
- Student educational demand shifted away from universities (16.1% going) and toward colleges and institutes (20.2% going), reflecting a stronger interest in career opportunities as opposed to academic education.
- Of the seven preferred post-secondary institutes in B.C., BCIT was second only to U.B.C. in popularity.
- The most important factors in selecting post-secondary institutes for the "going to college" group were particular program offerings (34%), followed by proximity to home (26.7%) and institute reputation (13.6%).
- First program choices for those students intending to enroll in technical institutes were engineering technologies (33.6%) and business management (25%).

---

3. Brown, D. and Poiker, T.N., British Columbia Post-Secondary Education Enrollment Forecasting Committee, Report #40, July 1982

- The majority of students perceived post-secondary education as a means for getting a job and for improving their income status.

- The most important factors influencing the "going to college" group to continue their education were reputation of chosen institution, occupation or trade and length of time needed to obtain recognized diploma.

- The top 3 occupational goals of "going to college" male students were, in order of priority, graduate engineer/architect/city planner, management/administrative and skilled technical work.

- The top 3 occupational goals of "going to college" female students were, in order of priority, semi-skilled and skilled social and/or medical professions, teaching occupations and management/administrative.

- The educational goals of 1981 students were more geared to the job market, a reflection of the difficult economic climate.

4. Review of Findings

Evident in the results of the three 1981 studies are common themes of relevance to BCIT. The primary reason students gave for enrolling in career/technical programs was to enhance their employability. Their educational goal was the acquisition of vocational skills for the purpose of improving their opportunities in the job market. A large proportion of BCIT students had been employed before enrolling. Students' preference for BCIT was based on the institute's reputation and the short, intensive, career-oriented programs. Proximity to home was another factor in selecting BCIT, with a significant majority of students coming to BCIT from the lower mainland. The occupational goals of students were directly related to BCIT's program offerings.

These results emphasize the importance of the educational role of BCIT in the province and lower mainland. Providing graduates with the skills, knowledge and attitudes required by employers is in direct response to the needs and expectations of both potential and actual BCIT students. The quality of the institute's programs and its responsiveness to changing labor market demands has enhanced the employability of its graduates thereby fulfilling the educational goal of the student population.

B. Student Profile Data

1. Full-time Enrollment 1982-83

Full-time diploma student enrollment increased by 1.5% between September 1981 and September 1982. The highest rate of increase was in the Engineering Division, with enrollments up 8.2%. The Business Division also experienced an increase, up 2.8% while the Health Division suffered a 9% decline in enrollments. This decline was primarily attributable to a purposeful reduction in the number of students accepted into the Health Division. The relatively large increase in the engineering technologies is consistent with findings of the previously cited research wherein engineering was found to be the first program choice of 1981 Grade 12 students intending to enroll in career/technical institutes.

The slow but steady trend of increasing representation of females in the full-time student population reversed itself in 1982, with a 2.7% decline in the proportion enrolled (See Table 4 and Figure 2). For first year first time students, males constitute 63.4% of full-time enrollments. This proportion decreases slightly in the second year, to 60.1% male full-time students. The reduction in the proportional participation of females is inconsistent with previous enrollment trends as well as with national, provincial and local population composition trends.

TABLE 4

B.C.I.T. FULL-TIME ENROLLMENT BY SEX

1975-76 to 1982-83

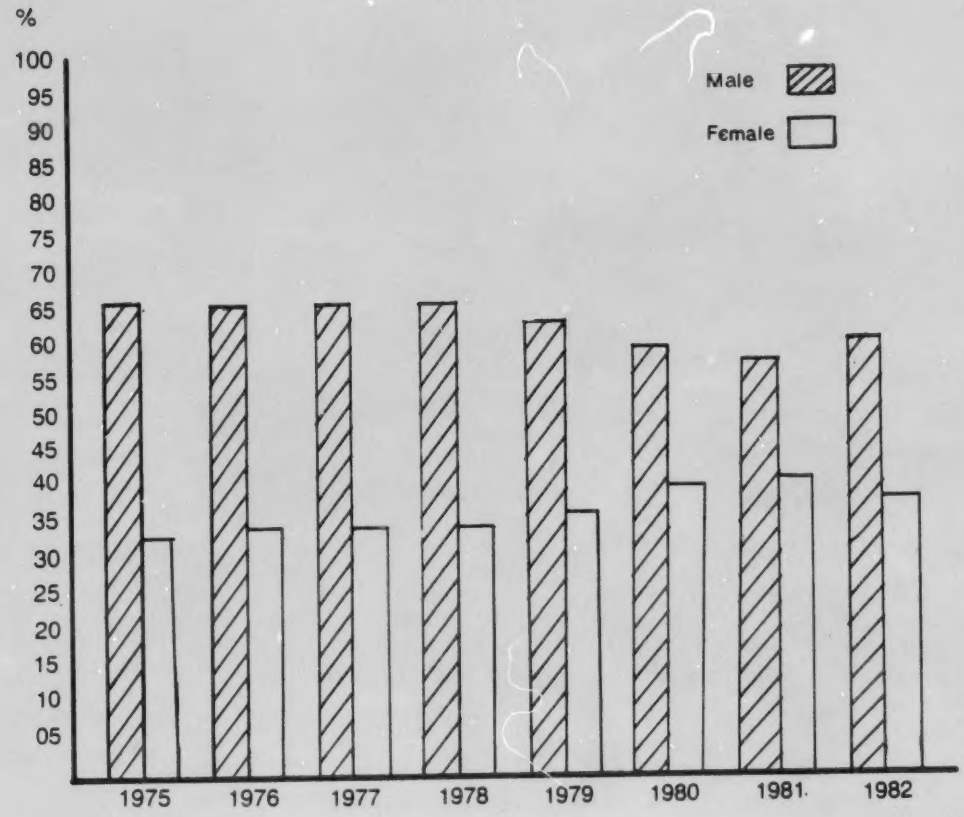
Year	Percentage	
	Male	Female
1975-76	66.5	33.5
1976-77	65.5	34.5
1977-78	65.9	34.1
1978-79	66.0	34.1
1979-80	64.0	36.0
1980-81	60.0	40.0
1981-82	58.2	41.7
1982-83	61.0	39.0

Note: Source: BCIT Fact Book, 1981, (1975-76 to 1980-81 statistics)

BCIT Enrollment by Age and Sex Report (1981-82 and 1982-83 statistics
1981:10:31 and 1982:09:27

Figure 2:

BCIT Full-Time Enrolment Distribution by Sex
1975-76 to 1982-83



Notes: Source: Table 2

TABLE 5

AVERAGE AGE OF FIRST-TIME, FULL-TIME

B.C.I.T. STUDENTS

Year	Average Age
1971	20.6
1972	20.7
1973	20.9
1974	20.7
1975	21.1
1976	20.8
1977	20.9
1978	20.9
1979	21.0
1980	21.1
1981	21.4

Notes: Source: Trend Analysis of Enrollments (preliminary tables), 1981 Enrollments, B.C.F.C., 82:11:22

TABLE 6

BCIT FULL-TIME YEAR ONE ENROLLMENT BY AGE

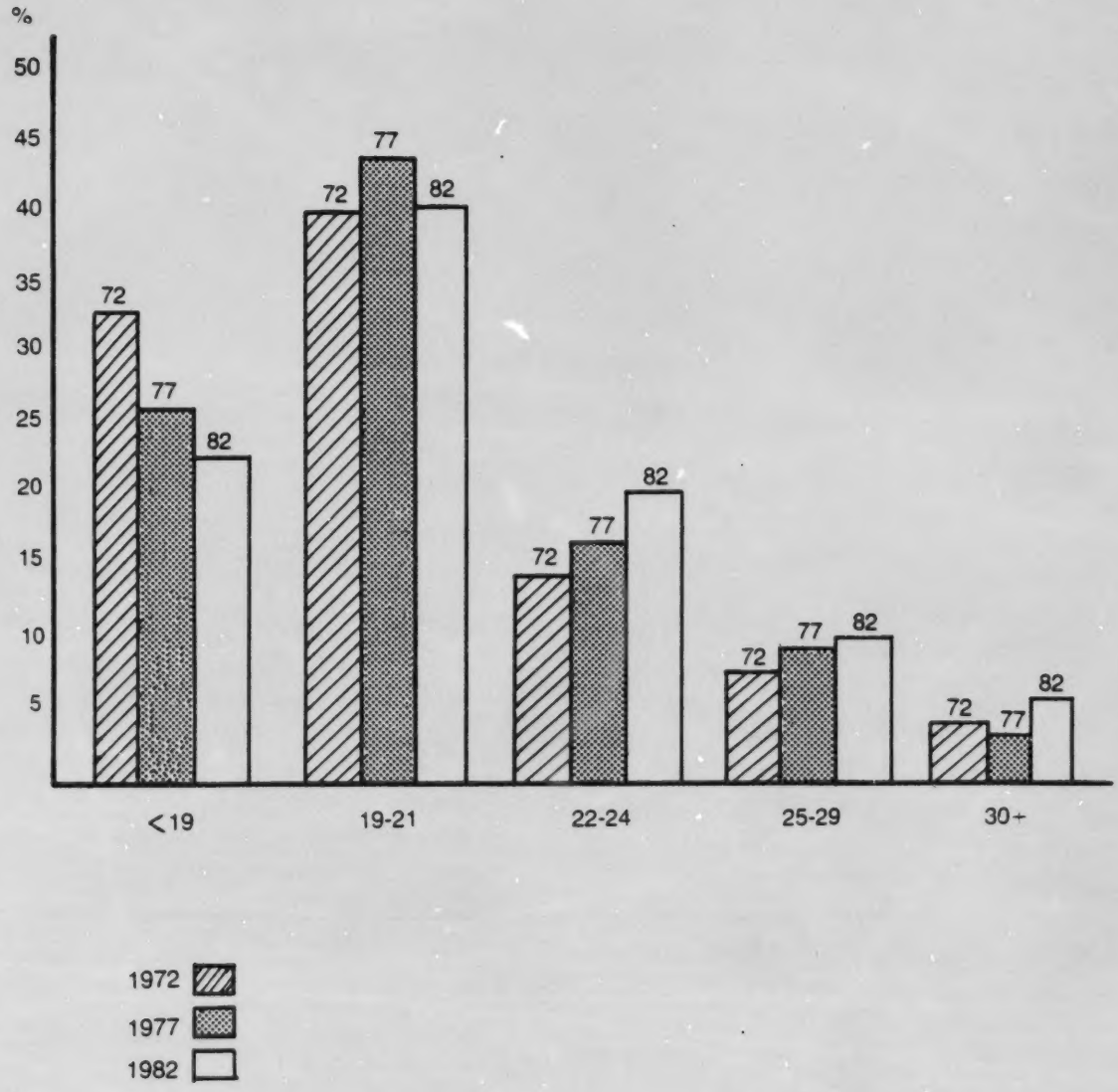
1971-72 to 1982-83

Year	Percentage						
	Under 19	19 - 21	22 - 24	25 - 29	30 - 34	35 - 39	40+
1971	30.5	42.7	16.1	7.7	1.8	.5	.6
1972	33.0	40.4	14.8	7.6	2.3	1.2	.7
1973	27.5	45.2	16.0	7.3	2.3	.9	.8
1974	21.0	52.9	15.3	8.1	1.5	.6	.7
1975	25.8	42.4	17.9	10.1	2.4	.9	.5
1976	28.6	42.9	17.1	7.9	2.1	.9	.5
1977	26.4	44.0	17.3	9.0	2.2	.6	.6
1978	29.3	43.1	15.1	8.8	2.4	.9	.5
1979	26.1	44.6	16.9	8.9	2.2	.8	.5
1980	25.9	43.4	17.5	9.2	2.8	.9	.2
1981	21.0	46.2	17.4	10.0	3.7	1.2	.5
1982	22.7	40.6	20.2	10.8	3.4	1.7	.6

Notes: Source: B.C. Post Secondary Education Enrollment Forecasting Committee files on age distribution (1971 to 1980 statistics).

BCIT College Statistical Reports as at 1981:10:31 and 1982:09:27, "Enrollment by Age, Sex and Enrollment Status" (1981 & 1982 statistics)

Figure 3:
BCIT Full-Time Year One Enrolment Distribution by Age
1972 / 1977 / 1982



Demographic and labor force changes would, instead, substantiate the projection of a steady increase in the participation of females.

The average age of the first time full-time student population has progressively increased over the past ten years (See Table 5), from 20.6 in 1971 to 21.4 in 1981. As evidenced in Table 6, the representation of students aged 19 to 21 decreased by 5.6%. The 22 to 24 age group experienced the greatest increase in first year enrollments, steadily approaching the level of those under age 19. This supports previous findings concerning the tendency for students to enroll in BCIT after a period of employment or attendance at a university or college.

Accordingly, the relative importance of secondary schools as a major source of potential institute students continues to decline. Table 7 shows the Grade 12 participation rate for first time full-time BCIT students, which has decreased consistently since 1978. Table 8 shows the source of full-time B.C.I.T. students as a percent of the previous years Grade XII population for the lower mainland and the total province. Though the fraction of Grade XII students who choose B.C.I.T. was increasing, in 1981 this fraction decreased for both the lower mainland and the total province. The current and projected drop in Grade XII enrollment has diminished the role of recent Grade XII graduates in B.C.I.T.

This trend is further reinforced when the previous year's activities of first year students are examined (Figure 4). For first year full-time students who enrolled in BCIT in 1981-82, 44.4% were in the workforce the year prior to entry. An additional 28.4% were attending university or

college, while the remaining 27.2% were attending high school. It is predicted that the aging trend and the shift in enrollment patterns will continue.

The primary geographic source of first year full-time BCIT students continues to be the lower mainland (Table 9). The previously cited profile studies found proximity to have to be a significant factor in student selection of a post-secondary institution, providing a basis for the increasing role of the lower mainland. The influence of cost of living factors during the current recession contributes to the importance of residential proximity, i.e. education is considerably less costly when there are no requisite expenditures for accommodation.

TABLE 7

GRADE 12 PARTICIPATION RATE FOR
FIRST TIME FULL-TIME BCIT STUDENTS

Year	Participation Rate
1971	1.53
1972	1.56
1973	1.43
1974	1.18
1975	1.35
1976	1.51
1977	1.28
1978	1.37
1979	1.27
1980	1.25
1981	1.13

Notes: Source: Trend Analysis of Enrollments (preliminary tables)
1981 Enrollments, B.C.F.C., 82:11:22

Grade 12 participation rate =

$$\frac{\text{First Time 16-18 age group BCIT enrollment}}{\text{provincial September Grade 12 enrollment}}$$

TABLE 8

SOURCE OF FIRST-TIME FULL-TIME BCIT STUDENTS BY REGION,

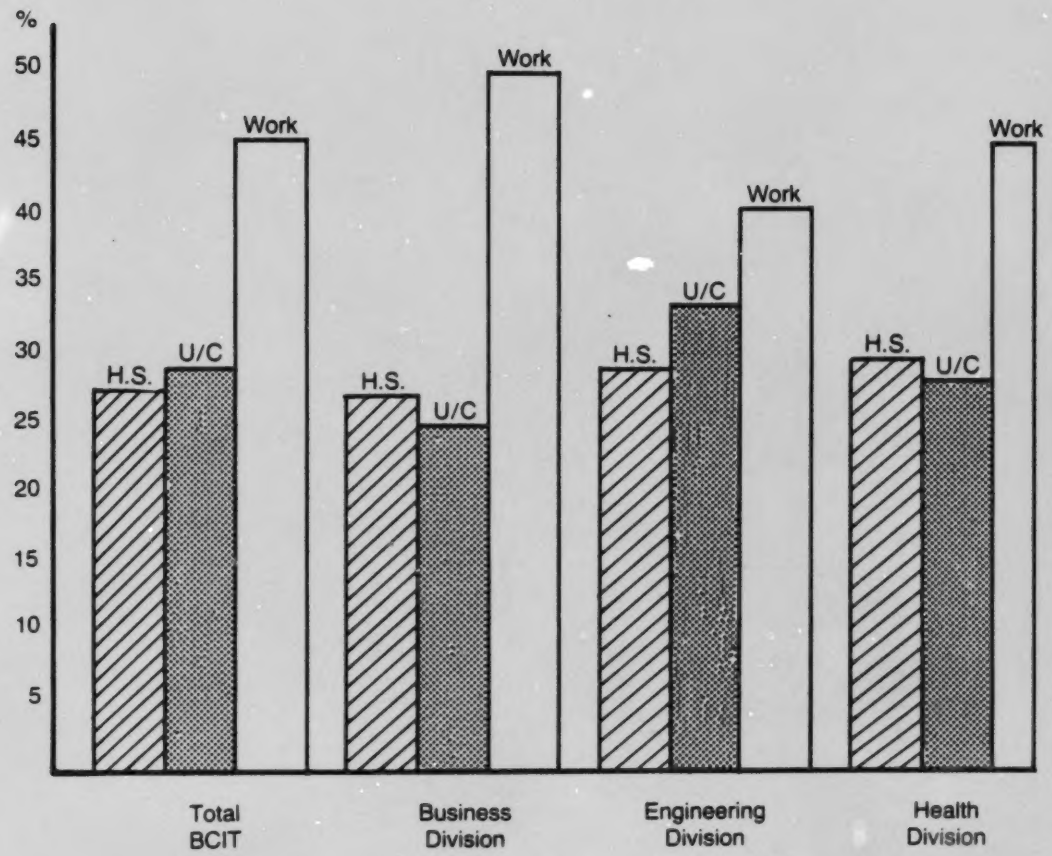
AS A PERCENT OF THE PREVIOUS YEARS GRADE XII REGIONAL ENROLLMENT

1974-75 to 1981-82

	Percentage	
Year	Lower Mainland	Total Province
1974	4.7	3.6
1975	5.8	4.4
1976	6.2	4.6
1977	6.9	5.1
1978	6.8	5.0
1979	7.1	5.2
1980	7.2	5.0
1981	6.8	4.8

Notes: Source: Adapted from Trend Analysis of Enrollments and participation Rates in British Columbia Post Secondary Education 1967-1980 B.C.F.C. report #37 (December 1981) and preliminary tables, 1981 Enrollments, 82:11:22

Figure 4:
BCIT First Year Student Activity the Year Prior to Entry
1981-1982



Notes: Source: Attrition Synopsis BCIT, August 15, 1981 to June 1, 1982, 82:9:23

High School
Univ./Coll.
Workforce

OIP 1031
82:12

TABLE 9

SOURCE OF FIRST-TIME FULL-TIME BCIT STUDENTS

BY

REGION WITHIN B.C.

1967-68 to 1981-82

	Percentage		
Year	Lower Mainland	Vancouver Island	Other B.C.
1967	62.6	17.6	19.8
1968	62.8	16.6	20.6
1969	64.2	13.6	22.2
1970	62.4	12.2	25.4
1971	69.7	10.2	20.1
1972	64.9	14.8	20.3
1973	68.7	12.9	18.4
1974	71.4	10.3	18.3
1975	70.8	11.8	17.4
1976	70.9	11.6	17.5
1977	73.1	11.1	15.8
1978	72.1	12.2	15.7
1979	71.6	11.6	16.8
1980	73.0	10.9	16.1
1981	73.1	9.3	17.6

Notes: Source: Trend Analysis of Enrollments and Participation Rates in B.C. Post Secondary Education 1967-1980, B.C.F.C. Report #37 (December 1981). and preliminary tables, 1981 Enrollments, 82:11:22

Lower Mainland includes the following college regions: Vancouver, Douglas, Capilano and Fraser Valley

2. Part-Time Enrollment

Female representation in the part-time student population increased to a greater proportion than ever before in 1982. Figure 5 illustrates the rapidly closing gap between male and female part-time students. This is of particular interest when viewed in terms of the decline in the proportion of females in the full-time student population.

The average age of the part-time student body in 1981 was 31.4 years, substantially higher than that of the full-time population. This aging trend has been dramatic when compared with the average age in 1968 of 21.4 (See Table 11). The 35-39 age group experienced the greatest increase over the past year while those aged 40 and over experienced the greatest decrease. (Table 12) Basically, fluctuations in age distribution were minimal and the trend of a steadily increasing older part-time student population is projected to continue.

The part-time student primarily resides in the immediate local area and is employed. The majority are pursuing a course that is related to their current job. Well over a third have previously attended college or university. Part-time enrollment can be expected to increase in direct proportion to the technological advancements adopted by major local employers.

Figure 5:
BCIT Part-Time Enrolment Distribution by Sex
1978-79 to 1982-83

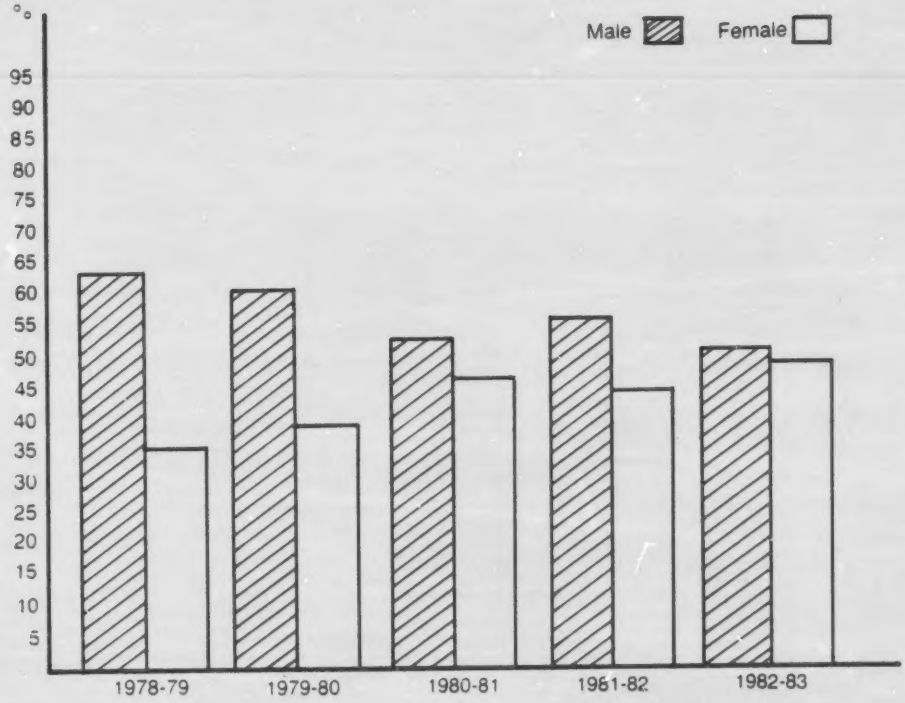


TABLE 10

BCIT PART-TIME ENROLLMENT DISTRIBUTION BY SEX[1]

1978-79 to 1982-83

Year	Percentage MALE	FEMALE
1978-79	64.3	35.7
1979-80	61.2	38.8
1980-81	53.9	46.1
1981-82	55.5	44.5
1982-83	51.6	48.4

Notes:

1. Source: BCIT Fact Book, 1981, (1978/79 to 1980/81 statistics)

   BCIT College Statistical Report as at 1981:10:31 - "Enrollment by Age, Sex and Enrollment Status" (1981-82 Statistics)

   Ibid 1982:10:31 (1982-83 statistics)

TABLE 11

AVERAGE AGE OF PART-TIME

B.C.I.T. STUDENTS

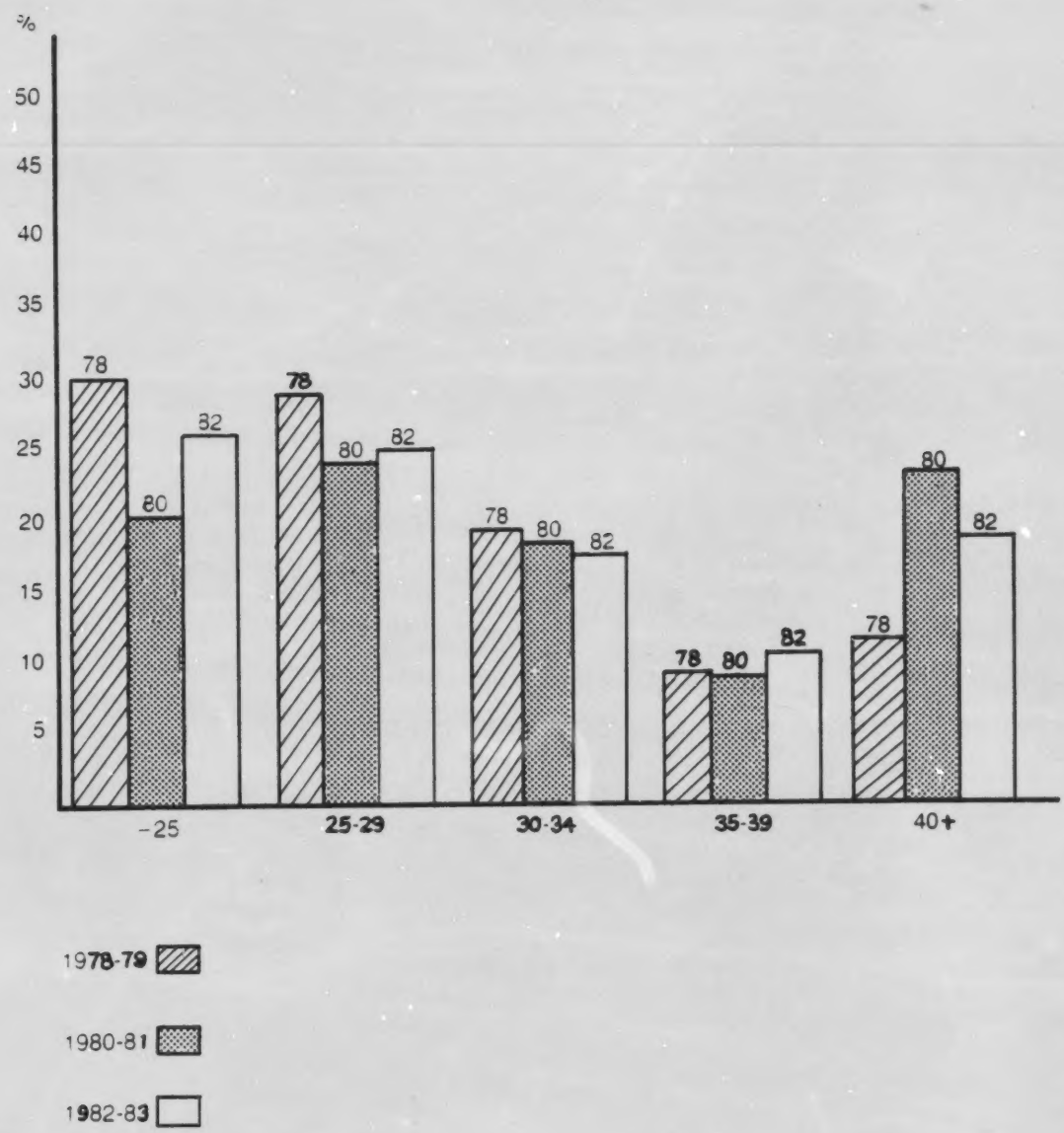
Year	Average Age
1967	23.1
1968	21.4
1969	23.1
----	----
1978	29.4
1979	30.5
1980	31.8
1981	31.4

Notes: Source: Trend Analysis of Enrollments (preliminary tables) 1981 Enrollments, B.C.F.C., 82:11:22

Data was not available for 1970-1977.

Figure 6:

BCIT Part-Time Enrolment Distribution by Age
1978 / 1980 / 1982



OIP 1031
82:12

TABLE 12

BCIT PART-TIME ENROLLMENT DISTRIBUTION BY AGE[1]

1978-79 - 1982-83

Year	Percentage				
	Under 25	25-29	30-34	35-39	40+
1978-79	30.2	29.2	19.4	9.5	11.7
1979-80	28.2	25.9	19.2	9.2	17.5
1980-81	24.2	24.3	18.6	9.3	23.6
1981-82	25.9	24.2	18.9	9.9	21.1
1982-83	26.3	25.3	18.1	11.3	19.0

Notes: 1. Source: B.C. Post Secondary Education Enrollment Forecasting Committee files on age distribution (1978-79 to 1980-81 statistics).

BCIT College Statistical Report as at 1981:10:31 - "Enrollment by Age, Sex and Enrollment Status" (1981-82 statistics).

Ibid 1982:10:31 (1982-83 statistics)

Conclusions

1. The demand for B.C.I.T.'s technological programs will continue to increase for both full-time and part-time studies. Depending upon the Institute's capacity, enrollment should grow modestly in the short term, escalating in the medium to long term.

2. The participation of female students is projected to steadily increase, most notably in the part-time student population.

3. As long as proximity to home remains a significant factor in selection of a post-secondary institution, the lower mainland will be the primary student catchment area. Until economic recovery decreases the importance of proximity, the lower mainland is projected to grow as the principal source for students.

4. The decline in enrollment of recent Grade XII graduates is projected to continue in the medium term, with an increasing proportion of full-time students enrolling after a period of employment.

5. Part-time enrollment can be expected to increase in direct proportion to the application of technological advancements in the workplace.

6. The full and part-time student populations are projected to continue to age in the medium term.

ECONOMICS

I. National[1]

There currently exists a severe worldwide recession. The Canadian economy has experienced three consecutive years of six months or more of declining real activity and six years of sluggish to non-existent real growth. In the second half of 1981, the most severe economic downturn since the Great Depression occurred. The real GNE fell by over 6% in the past year. The unemployment rate has reached an unprecedented post-depression high of 12.2%. Inflation was up 12.5% in 1981 and in the past year has shown relatively little moderation. Real output of the Canadian economy is expected to decline by 2.5% in 1982. Productivity growth is at zero percent. Business bankruptcies are up 40% above the 1981 level. Investments are down and interest rates have soared. The current recession has been larger and deeper than expected, resulting in economic pessimism and a general sense of malaise.

The short-term outlook reflects that there are no "quick fixes" for the current economic difficulties. A further decline in the GNP is expected before the end of 1982. The timing and strength of a recovery is integrally tied to the behavior of inventory investment. The high cost of holding inventories resulting from high real interest rates combined

1. This section adapted from the following sources:

Conference Board of Canada, Quarterly Canadian Forecast, Medium-Term Outlook, Applied Economic Research and Information Centre, Executive Summary, October 1982.
Economic Council of Canada, Lean Times, Policies and Constraints, Nineteenth Annual Review, 1982., Catalogue No. EC21-1/1982E.

with falling sales have caused businesses to reduce inventories, resulting in a massive drop in production. Continued large declines in inventories are anticipated, causing further delay in the recovery and weaker economic growth. Further declines are expected in consumer spending along with a sharp drop in business investment. Rising unemployment, along with interest rates and continued inflation, are all predicted until mid-1983. The only sector of the economy projected to show a significant improvement in 1983 is residential construction.

The outlook for the Canadian economy over the medium term is highly dependent on the pattern of the U.S. recovery in 1983 and 1984. Due to the volatile nature of the current economy, there is a great deal of uncertainty about the prospects for recovery, and any projection of its future course has been qualified as subject to significant risk. Nevertheless the following reflect some common projections for economic activity over the next 5 years (see Table 13).

- Real Gross National Product is expected to grow on the average by 2.4% over the 1982-1987 period, just barely in line with potential growth.
- Rate of inflation, as measured by the Consumer Price Index, should begin a downward trend and is expected to average between 7.2% and 6.7%, dependent upon pressure from energy prices. The Canadian inflation rate should continue to average about 1.5% above the U.S. rate.

- The real economic performance is substantially below potential, reflecting a significant amount of under utilization of resources. Over the 1982-87 period, output tends towards its potential level, but the growth rate of potential output slows. The anticipated reasons for this slowdown are a further slowdown in labor force growth and reduced investment spending.
- The unemployment rate is expected to decline from its current level but should remain above 8%. Real wages will increase at less than 1% per year.
- Productivity growth is assumed to remain near its present level of zero percent per year over the 1982-87 period.
- A slow down in labor force resulting from slowing population growth and discouraged workers effect is anticipated. Labor force participation rate however, rise steadily, particularly for women.
- Considerable weakness in investment spending is predicted to continue as are high real interest rates.
- The Federal deficit will persist, with a slight downward trend as stronger economic growth resumes. The restrictive fiscal policy of the government is assumed to continue over the medium term, thus contributing very little to an improvement in the performance of the economy.

TABLE 13

KEY ECONOMIC INDICATORS

MEDIUM TERM CANADIAN FORECAST

(Percent Rates of Growth)

	1981	1982	1983	1984	1985	1986	1987
Gross National Product ($1971)	3.1	-5.2	2.3	5.5	5.0	3.8	3.0
Consumer Price Index	12.5	11.0	7.7	5.2	5.0	5.5	5.7
Total Employment	2.6	-3.0	-1.3	3.4	4.8	4.5	3.5
Unemployment Rate	7.6	10.9	12.7	11.7	10.5	9.3	8.3
Average Weekly Wages	11.9	9.7	8.0	7.3	7.4	7.0	6.2
Real Average Weekly Wages	-.5	-1.2	0.2	2.0	2.3	1.4	0.4
Private Non-Farm Productivity	0.0	-2.4	4.9	2.4	0.2	-.9	-.7
Federal Government Balance (absolute magnitude)	-7979	-20587	-18981	-13739	-12422	-12962	-13276
Corporate Profits Before Taxes	-10.5	-31.3	39.0	20.0	12.7	8.6	10.1
Housing Starts	12.5	-30.2	44.2	23.3	2.8	-8.7	-4.3

Source: Adapted from: Conference Board of Canada, Quarterly Canadian Forecast, Medium-Term Outlook, Applied Economic Research and Information Centre, Executive Summary, October 1982

II. British Columbia[2]

Optomistic forecasts for the B.C. economy based on economic performance during the first half of 1981 were shattered when the severe recession in the industrialized world began in the latter half of 1981. Dismal economic conditions have continued in 1982 and have seriously affected economic activity in British Columbia (Table 14). Employment has declined by 4% in the past year, while unemployment soared to a post-depression high of 13.4% (Figure 7). The largest declines in employment have been in manufacturing and trade, with forest and mining related sectors being the hardest hit. High interest rates have had the greatest influence on the economy, rising to 18.5% at mid-year before declining in the second half. This effectively reduced capital investment to the degree that growth in corporate expenditures is expected to fall below the Canadian average for the first time since 1975, from 23.2% in 1981 to -1.0% in 1982. Accordingly, corporate profits have suffered substantial loss, down as much as 50% in some cases.

The rate of inflation rose rapidly in 1981 to 14.3%, and has only recently begun to decline (Figure 8). A 5% drop in B.C.'s gross domestic product is anticipated for 1982. This is the sharpest drop in at least two decades and is double the drop during the 1974-75 recession. In the

---

2. This section adapted from the following sources:

   B.C. Central Credit Union, Economic Analysis of British Columbia, Economics Department, Vol. 2, No. 7, 1982:11:16

   B.C. Ministry of Finance, Financial and Economic Review,42nd Edition, August, 1982

TABLE 14

BRITISH COLUMBIA

Selected Economic Indicators

	1980	1981	1982e	1983f
	(Annual Rate of Change)			
Real Gross Provincial Product	5.2	2.0	-5.0	2.0
Total Capital Expenditure	27.8	23.2	-1.0	5.0
Personal Disposable Income	14.3	14.5	7.5	8.0
Consumer Prices (CPI)	9.4	14.3	10.5	7.5
Retail Sales	15.0	13.5	-2.7	10.0
Employment	5.5	4.7	-4.0	2.0
Help Wanted Index	8.8	1.6	-80.0	20.0
Population	2.7	1.8	1.4	1.8
Housing Starts (Units)	37,546	41,585	19,500	25,000
Auto Sales (1,000 Units)	102.7	101.1	70.0	80.0
Coal Exports (1,000 Tonnes)	10,022	11,126	11,944	12,000
Newsprint Exp.(1,000 Tonnes)	1,190	1,014	1,000	1,100
Unemployment Rate (percent)	6.8	6.7	11.6	11.3

e = estimate f = forecast

Sources:

B.C. Central Credit Union, Economic Analysis of British Columbia, Economics Department, Vol. 2, No. 7, 1982:11:16.

OIP 1031
82:12

Figure 7:

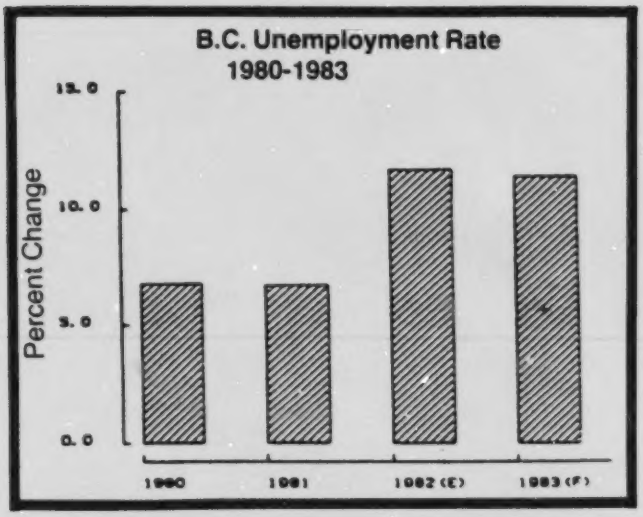
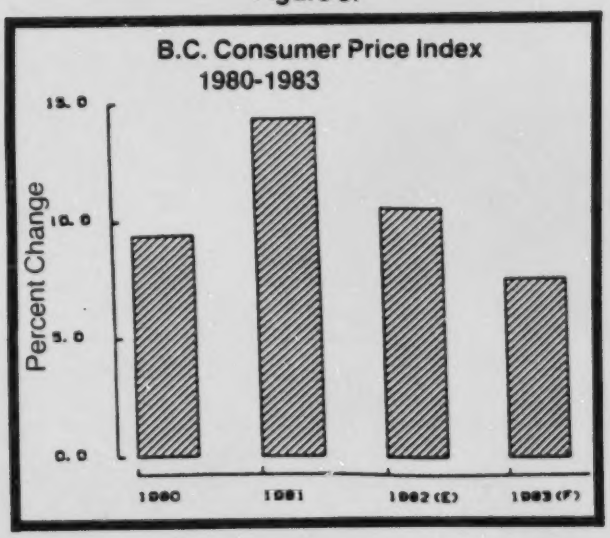


Figure 8:



first half of 1982, retail sales fell 1.1% and have been lagging behind the modest recovery that occurred in most provinces since the summer. Residential housing starts for 1982 are down 53% from the 1981 production level. The value of non-residential building per units is expected to be down by 30% in 1982. Exports loaded in British Columbia fell 5.3% in the first half of the year while the value of manufacturing shipments has declined by 9.7%. Production reductions have been dramatic with sawn lumber down 23.5%, pulp down 7.8%, paper down 7.2% and oil down 0.6%. Increases recorded in the first half of the year in coal production (+11.9%) have now been hit with reductions, as worldwide coal demand declined 20% from earlier estimates. Exports of molybdenum declined by 22.5% in 1981, and are continuing to decline due to an over supply. Copper exports declined by 16.1% last year and the total value of 1982 exports is expected to be $80 million less than in 1981.

Despite the currently negative economic profile, economists are predicting some relief in 1983 and measurable recovery in B.C. in 1984. This projected upturn is qualified by prerequisite lowering of interest rates to below 10% in both Canada and the U.S. over the next six months. Other necessary conditions for recovery include an increase in U.S. industrial activity and housing starts, an increase in world demand for Canadian gas, coal, copper, molybdenum and other minerals, and a return of the consumer to the marketplace. Assumming that these conditions are met, the following forecasts have been made for the B.C. economy:

- Interest rates will remain in the 7 to 14 percent range for the next several years. For 1983, Canada's chartered bank price should decrease to the 9 to 12% level.

- Inflation is projected to be much lower, with a 7.5% increase in the CPI for metropolitan Vancouver in 1983 (U.S. 14.3% in 1981).

- The value of B.C. gross domestic product is forecast to increase in 1983 - from $40 Billion in 1982 to $44 Billion in 1983.

- In 1984 B.C. is projected to lead economic recovery in Canada with a 7.5% increase in real output, compared to a 5% gain for the nation.

- Corporate profits should improve in 1983. Capital expenditures will remain relatively constant, and are not expected to improve until 1985, after the recovery becomes fully established.

- Capital is forecast to be scarce due to discontinuation of long-term capital financing by banks. This is predicted to limit segments of the economy, such as energy, transportation and secondary manufacturing since they will require new development funds in order to grow. In contrast, forestry, mining and fishing industries will not require new funds and will therefore not be heavily impacted.

- Housing starts are predicted to increase modestly in B.C., from 19,500 units in 1982 to 25,000 in 1983. Housing prices should remain relatively stable in 1983.

- Non-residential construction expenditures should remain constant this year, and increase over the next few years. Contributory sources are the Northeast Coal Development project and the 1986 World's Fair.

- B.C. forestry activity is expected to remain depressed over the winter but is forecast for an upturn in 1983, dependent upon an increase in U.S. housing starts. Lumber exports in 1983 are projected to increase by 20%, while pulp and paper should increase by 10 to 20%.

- Mining, gas and oil industries are not predicted to rebound until 1984. The export of coal should increase modestly in 1983 and markedly in 1984, because of the initiation of shipments of Northeast mined coal.

- Copper and molybdenum are in serious difficulty, with no increase in demand expected until the market for steel picks up internationally.

- Retail sales are projected to increase by 10% in 1983. Strong markets are predicted for moderately-priced quality goods and home entertainment products.

- Unemployment is forecast to remain high, at above 10% throughout most of 1983.

- Tourism has not suffered severely during the current recession. The outlook for 1983 is for improvement, particularly in the business travel component. Increases in motel/hotel occupancy are also expected.

Conclusions

1. The short-term outlook, through the first half of 1983, is negative for all segments of the economy.

2. Interest rates must fall and remain below 10% in order for recovery to occur. Governments must exert pressure to effect this change and must ensure stabilization once achieved. Increases in production expenditures, and employment, all necessary factors of economic growth, are contingent upon a decrease in real interest rates.

3. Unemployment will continue to be a pervasive problem for B.C. in 1983.

4. The forestry, metal and mining industries will remain depressed in the short-term.

5. B.C. has the potential and is projected to lead economic recovery in Canada by 1984.

LABOR FORCE

A. In Perspective[1]

Potential output is an important determinant of the performance of the Canadian economy. Major components of potential output are the supply of labor, stock of capital, and the level of productivity involved using these factors of production. An increase (decrease) in any of these components raises (lowers) potential output. During the 1970s there was a significant slowdown in the growth rate of potential output, which is continuing in the 1980s. This trend has been attributed to a slowdown in productivity growth and slower labor force growth associated with slower population growth. Performance has resultingly dropped in relation to potential, and labor resources are being significantly under utilized. Unemployment has increased to modern record levels and employment has fallen absolutely. Figure 9 illustrates the decline in both employment and labor force growth over the past 6 years.

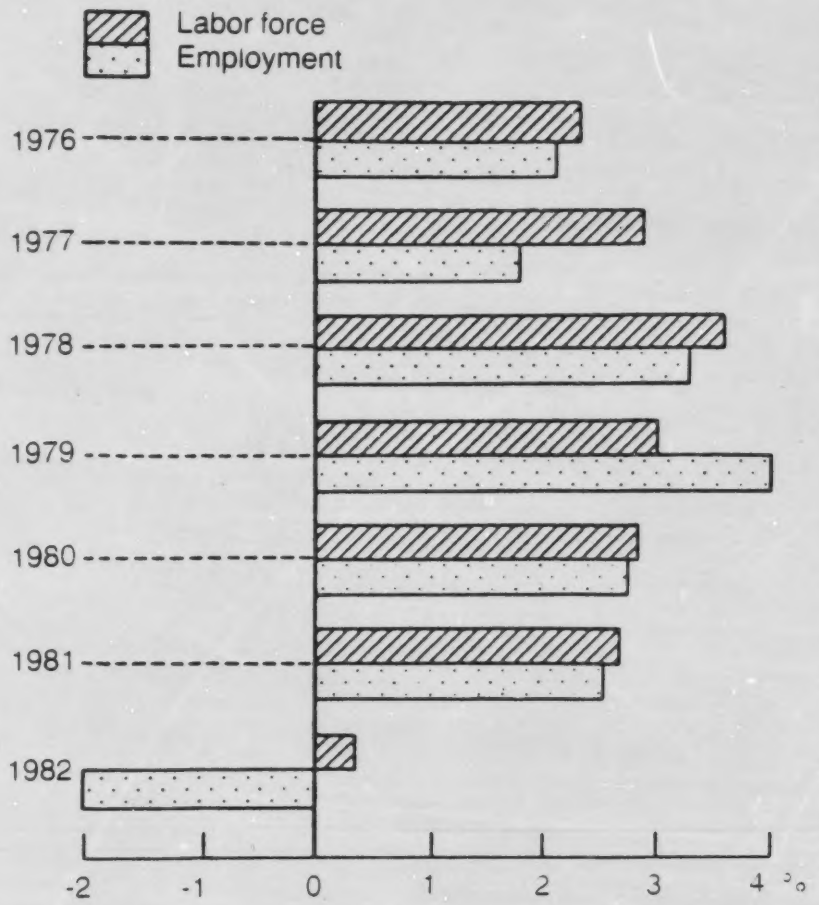
Canada's unemployment rate has averaged 7.5% or higher for five consecutive years. In 1982 the extreme weakness of the economy contributed to a dramatic increase in the unemployment rate, as shown in Figure 10. By October, 1982, unemployment had climbed to its highest levels since the

---

1. This section adapted from the following sources:
   B.C. Ministry of Labor, British Columbia Labor Forces Statistics, October, 1982, Special report, Research and Planning, Program Services Branch, 387-5071

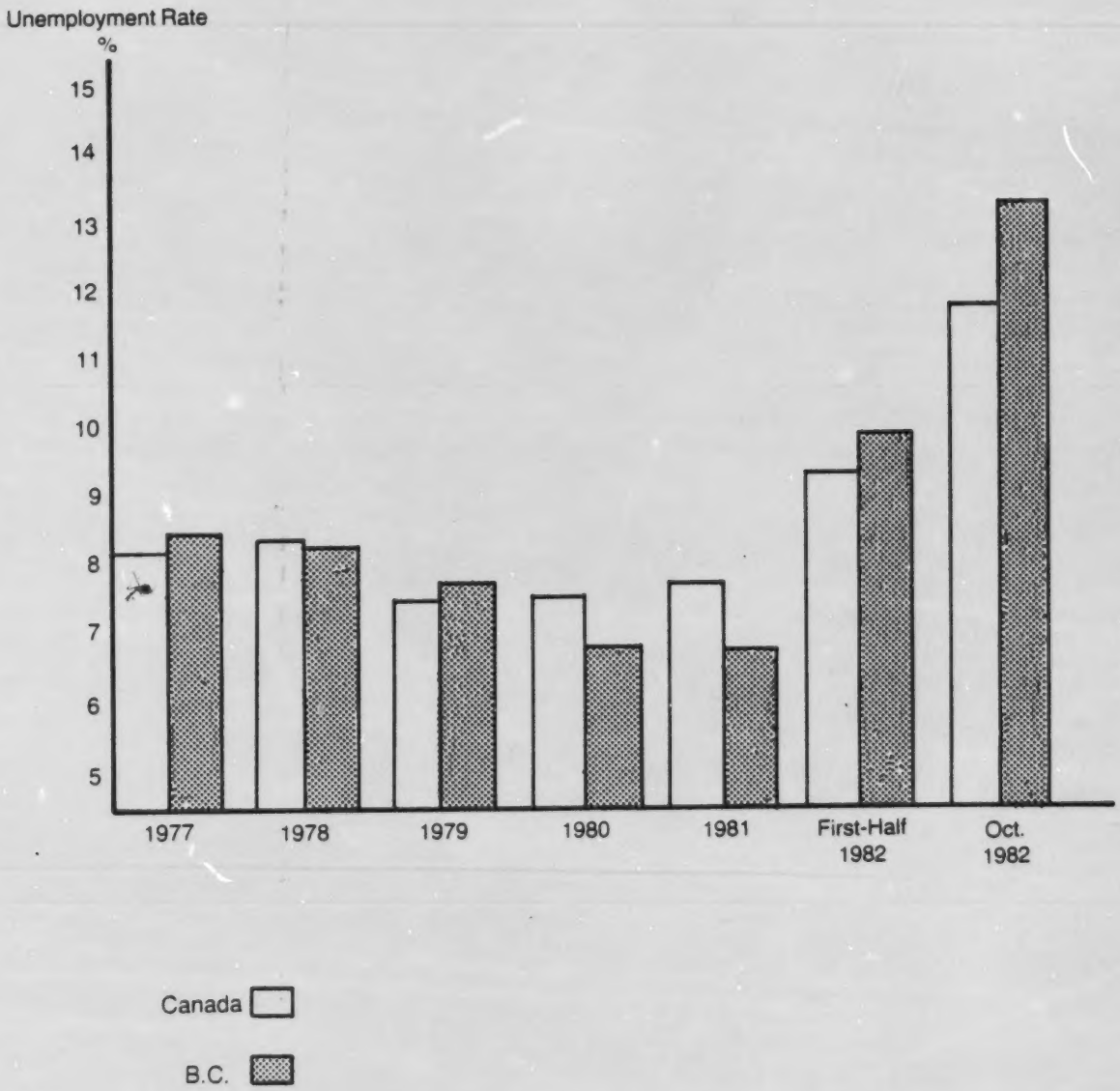
   Economic Council of Canada, Lean Times, Policies and Constraints, Nineteenth Annual Review, 1982, Cat. No. EC21-1/1982 E.

Figure 9: Annual Growth in the Labor Force and in Employment, Canada, 1976 to First Half 1982



SOURCE: Estimates by the Economic Council of Canada based on data from Statistics Canada

Figure 10:
Unemployment Rate for Canada and B.C.
1977-1982



1930s, to 11.7% nationally and to 13.2% in British Columbia. Unemployment has become a full-blown crisis, with 178,000 jobless in B.C. and 1,388,000 without jobs nationally. This is even more striking when it is noted that these figures underestimate the degree of unemployment by omitting those who withdraw from the labor force as a result of their frustration in not finding a job. If discouraged workers were added, it is estimated that the unemployment rate would jump an additional one to two percent. Since the size of B.C.'s workforce dropped slightly over the past year, this would suggest a fairly prominent discouraged worker effect in the province.

Historically, the long-term unemployed (exceeding 3 months in duration) accounted for approximately 45% of all unemployment. The rapid escalation of unemployment over the past few months alone cannot be attributed to the chronically unemployed but rather to increased lay-offs of the traditionally employed. And, it is predicted that unemployment won't hit its peak until mid-winter.[2]

British Columbia has experienced one of the largest short-term increases in unemployment in the nation, up 89.4% from last year. This increase was second only to Alberta, at +142.5%. Total provincial employment has shrunk by 89,000 positions, or -7.1%, over this period. Those sectors most negatively impacted by declines in employment are, in order of severity, manufacturing, construction, trade and primary industries (forestry, fishing and mining). Together, these sectors accounted for 93% of the decline in the provincial employment base.

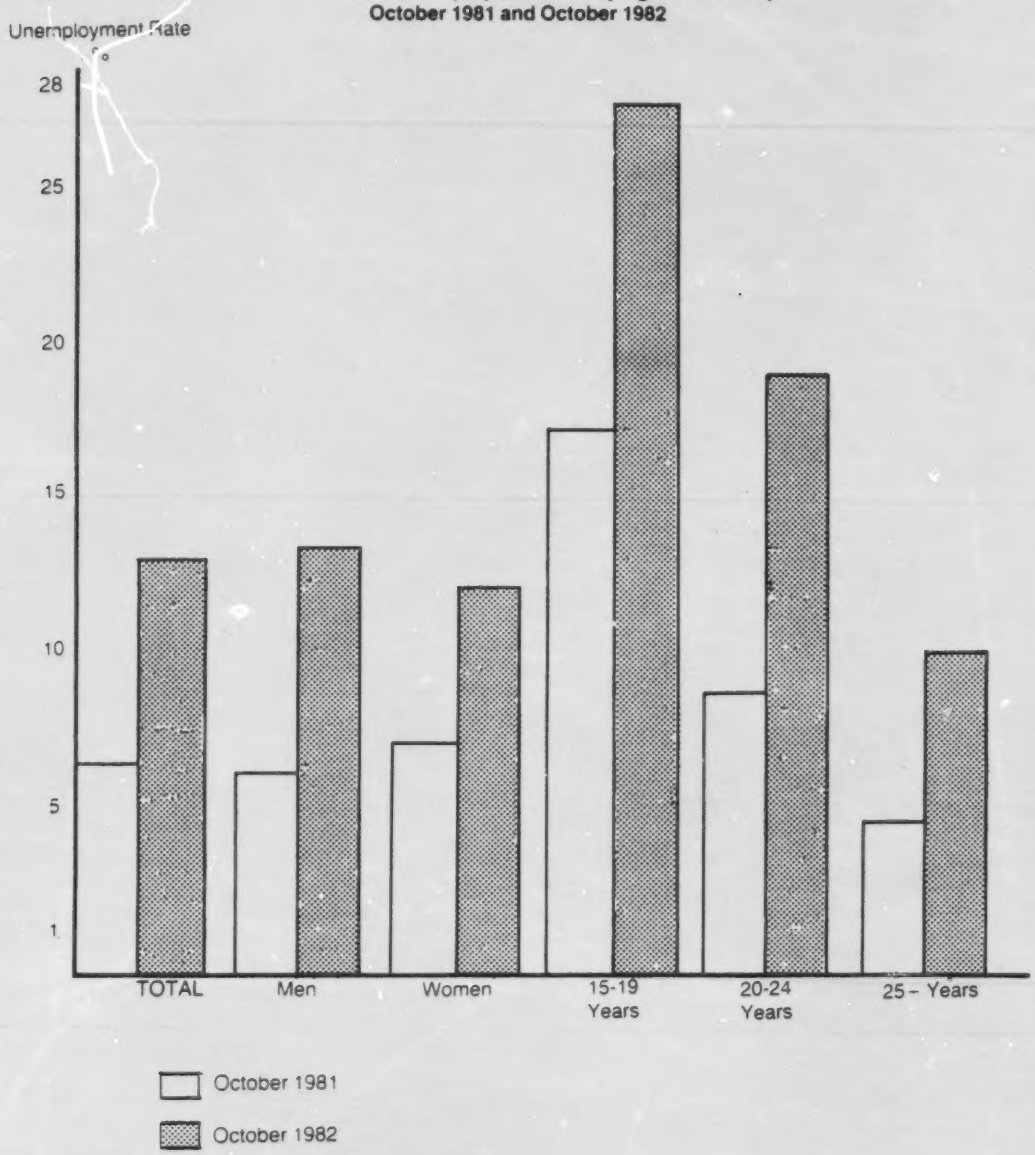
2. Financial Post, Jobless at Crisis Point - But Aid is Pricey, 82:10:09

While all groups have felt the effects of the recent slowdown in economic activity, the impact has fallen especially heavily on certain age and sex groups. Figure 11 shows that males have experienced more significant increases in unemployment than females. Current rates of unemployment are 13.8% for men and 12.4% for women. The younger age groups have also been hardest hit, with nearly one in four younger workers unemployed. Participation rates for all groups dropped slightly (Table 15), most of all for young males. Since this was not associated with a concomitant drop in the source population, it is most likely attributable to discouraged workers withdrawing from the labor force.

Naturally, much the same picture emerges though not as extreme as in B.C. The labor force grew a mere 0.2%, employment dropped 4.3% and unemployment rose 55.8%. Males and youths had the most significant increases in unemployment, and participation rates fell for all groups.

In Vancouver, the unemployment rate doubled over the past year while participation fell slightly (Table 16). Nevertheless, Vancouver's unemployment rate remained 2.1% below that of the province, reflecting the greater diversity of the local economy. In Victoria, participation rates increased, as did unemployment.

Figure 11:
B.C. Unemployment Rate by Age / Sex Groups
October 1981 and October 1982



OIP 1031
82:12

TABLE 15

PARTICIPATION RATES FOR CANADA AND B.C. BY AGE/SEX

October '81 & October '82

Participation Rates	CANADA		B.C.	
	October'81	October'82	October'81	October'82
Total	64.7	63.8	64.9	63.6
Men	77.9	76.5	77.6	75.4
Women	52.0	51.7	52.6	52.3
Youths (15-24)	65.6	64.0	70.2	67.5
Adults (25+)	64.3	63.8	63.4	62.5

TABLE 16

REGIONAL UNEMPLOYMENT AND PARTICIPATION RATES

October '81 & October '82

	Percentage			
	Unemployment Rates		Participation Rates	
	Oct'81	Oct'82	Oct'81	Oct'82
Vancouver	5.5	11.1	66.8	66.3
Victoria	6.9	12.7	59.4	61.0

B. Projections[2]

- During 1982-87 the labor force is projected to grow at a declining pace, reflecting a marked slowdown in the growth of the source population.
- The decline in the birth rate in the last 20 years is predicted to reduce the number of new (youth) entrants to the labor force source population. Nevertheless, participation rates of the under-25 group are projected to continue to rise.
- Due to aging, the source population of domestic origin will be decreased by deaths. This will further contribute to the slowdown in labor force growth.
- The 25-44 age group is expected to show the largest gains as the baby-boom generation moves into prime working age.
- Participation rates, particularly for women are projected to rise steadily. This indicates that deceleration of the labor force growth will be less marked than that of the source population.
- The participation rate for men aged 25 to 44 is expected to remain constant, while continuing to decline for men aged 45-64.
- Women aged 25 to 44 will show the largest increase in participation, while women in the 45 to 64 age group will show fairly strong increases.

---

2. This section adapted from: Economic Council of Canada, In Short Supply, Job and Skills in the 1980s, Cat. #EC 22-108/1982E

- In 1983, unemployment is projected to rise. By mid-decade job opportunities should expand, but not at a rate that would imply a substantial fall in the rate of unemployment, which is projected to remain above 10%.

- In sum, labor force growth will continue to slow down. Increases in participation rates will maintain labor force growth rates above population growth rates, but will not be strong enough to counter the trend of slowing population growth. The aging of the work force will continue and could be a source of experienced labor in the future. The increasing participation of women and youth will help bolster the supply of labor, but will also require social, educational and labor market policies and programs to accommodate them.

C. The Dynamics of Supply and Demand[3]

The labor market of today is characterized by imbalances, with both jobs and skilled workers in short supply. Skill shortages are both widespread and acute in the midst of generally high unemployment and in the context of job scarcity in many areas and occupations. The presence of skill shortages can have unfortunate social and economic implications. Without sufficient skilled individuals in the critical occupations, major resource development projects will be adversely affected, productivity will decline further, the growth and international competitiveness of

3. This section adapted from: Economic Council of Canada, In Short Supply - Jobs and Skills in the 1980s, 1982

Canada will be hampered and large numbers of workers with lesser skills will be denied employment opportunities. Future growth will depend on an improved domestic capacity to develop the skills needed by the economy.

Canada is one of many countries in which technological change can be expected to bring about far-reaching alternatives in the labor market. Advanced computer and micro-chip technology present the prospect of pervasive redeployment of labor. The imbalance problems of skill shortages and joblessness may be exacerbated by technological changes as well as by shifts in the pace of economic activity among sectors and regions.

In order to enhance the employment opportunities of the labor force it is important to monitor the nature and direction of the progress of the economy and to anticipate the resource requirements that this progress implies. The provision of projected information on occupational demand is essential to this purpose.

High vacancy growth occupations which are also expected to experience skill shortages include architecture and engineering occupations, metal machinery and related occupations, processing occupations and computer programmers,analysts and related occupations. Graduates in these disciplines should be in an advantageous position when seeking employment in the future.

Medium-term projections (1981-1985) for occupational growth are as follows:

. Managers, administrators and related occupations are expected to grow at a slightly lower rate then the national average.

- Accountants, personnel and other management occupations will grow at a pace only slightly faster than average.
- Occupations in physical and life sciences, architects and engineers, mathematics, systems analysis, and related fields are all expected to enjoy healthy growth.
- Employment in the social sciences, law, and diagnosing and treating occupations (physicians, dentists, vets) will grow at a rate slightly lower than average.
- Teaching occupations will decline.
- Health assisting occupations (nursing, therapy etc.) are expected to have an employment growth rate significantly above average.
- Clerical, bookkeeping, and sales occupations are projected to increase well above average.
- Agriculture, fishing, trapping and forestry are not expected to experience growth.
- Mining and energy related occupations are expected to grow rapidly.
- Manufacturing occupations are not expected to grow, except in raw materials processing.
- Jobs in the service sector will match the national average growth rates.

It should be noted that though employment growth suggests the importance of potential job availability, it does not necessarily indicate shortage problems. To identify imbalances, vacancy estimates must also be incorporated.

Occupational skills that are associated with shortages of labor fall into two broad catagories - materials processing, the most prevalent, and managerial and professional positions. These categories represent approximately 60% of shortage-related vacancies.

Processing accounts for the greatest share of hiring difficulties and is of primary concern to the skilled manufacturing trades. This category consists of occupations associated with transferring raw materials into semi-finished and finished goods. There is an under supply of highly trained blue-collar workers in the following positions: machinery mechanics, machinists, motor vehicle diesel and heavy duty mechanics, welders, tool and die makers, mill wrights, and electrical trades.

For the managerial and professional category, the most critical shortages are in the scientific and engineering fields. Specific problem occupations are those involving engineers, computer programmers and analysts, engineering technicians and technologists. These imbalances are expected to compound over the next 10 years due to rapid technological advancement. The continuing diffusion of electronics - based technology and the growing emphasis on research and development will contribute to rising demand. Mega-projects and other energy-related activities will

extend similar pressure for appropriately trained personnel.

Producing the skills required by the Canadian labor market will be an enormous task that requires a concerted and cooperative effort on behalf of the private sector, the educational system and the governments. Public training policies and programs must become more responsive to market conditions. The education system, particularly post-secondary, must focus on developing vocational skills that will alleviate the present and projected imbalances. The private sector must increase its currently inadequate investment in employee development. A highly skilled and efficiently allocated labor market is deemed essential if Canada is to realize its potential for growth in the upcoming decade.

Conclusions

1. Labor force growth will continue to decline, reflecting a marked slowdown in the growth of the source population. Even increases in participation rates will not be strong enough to counter the trend of slowing population growth, though participation increases will contribute to maintaining labor force growth above population growth.
2. The demographic composition of the labor force is in a state of change. It is aging rapidly, as is the population, with fewer new entrants. Participation has increased for women and youths, but these groups are precisely those whose unemployment rates are higher than average. Policies and programs are needed to accommodate the specialized training needs of youthful entrants and the retraining needs of women in low demand traditionally female occupations.

3. Unemployment has become a widespread social and economic ailment, climbing to unprecedented post-depression levels. Concurrently, the employment base has declined and productivity has stagnated. Recovery will be dependent upon increased utilization of labor and material resources, thereby increasing productivity and returning output to its potential level.

4. The labor market is characterized by the coexistence of skill shortages and joblessness. The most critical shortages in the managerial and professional category are in the scientific and engineering fields. This imbalance is expected to compound over the next decade due to rapid technological advancement.

5. Within the post-secondary educational system, colleges and institutes are more responsive than universities to the needs of the labor market. By incorporating program flexibility these institutions can assist in minimizing skill shortages of the future through targeted vocational training. This has important implications for BCIT in that most of its technological programs are directly related to the provision of skills in critical shortage areas.

NATIONAL POLICY AND LEGISLATION

I. National Principles and Objectives of Federal Programs That Support Post-Secondary Education[1]

At the July 9, 1982 meeting with the Ministers of Education, the Secretary of State presented the following principles underlying Federal support of post-secondary education:

1. Accessibility, equity and educational opportunities. Federal programs should be consistent with basic educational needs, including reasonable access to post-secondary education regardless of place or residence or socio-eonomic background, and with a concern for fairness and equity. Post-secondary education benefits both society as a whole and those who participate in post-secondary education. However, it can benefit groups and individuals unequally. Federal support should therefore encourage equitable opportunity to post-secondary education throughout the country and should encourage an equitable correspondence between the costs and benefits of that education.

2. Federal role. Federal policies should be based on the assumption that the post-secondary institutions and their faculty must operate largely autonomously in carrying out their principal function of creating and disseminating knowledge and promoting independent critical capacity in their students. The institutions address concerns and provide benefits that are national and international as well as regional and local in scope; the federal role should be concentrated on the national and international objectives, not on those that are primarily local or regional. The federal government, as is the case with the national governments in all advanced countries, should play a major role in ensuring the viability of post-secondary education across the country, in ensuring the portability of benefits and the achievement of appropriate national objectives, and in arranging its financing such that the costs of post-secondary programs whose benefits transcend provincial boundaries are fairly shared by all Canadians.

---

1. This section adapted from the Secretary of State's presentation to the Ministers of Education, July 9, 1982.

3. Comparability and standards. Federal programs should encourage the development and maintenance of a post-secondary capacity with high standards throughout the country and with sufficient comparability in those standards to allow reasonable mobility of students, teachers and graduates across the country.

4. Accountability. Federal programs should be provided for defined purposes and Parliament should have the information needed to ensure that funds are being used for the purposes intended. The beneficiaries of federal educational funding and the general public should be aware that this funding comes out of federal taxes. Information about the operation of the programs and their impact must be sufficient to allow assessment of their efficiency and effectiveness.

5. Stability and flexibility. Post-secondary funding should be based on known, stable criteria to allow proper planning in the education system and by governments, to the extent that this is consistent with the achievement of national objectives. Funding stability should not, however, encourage rigidities in the post-secondary system; it should be provided in a manner that creates incentives for efficiency and innovation in the colleges and universities.

On the basis of the above principles, the following national objectives were promulgated:

1. General support objective: to help maintain and strengthen the post-secondary capacity throughout Canada required to respond to the individual learning and development aspirations of Canadians and the needs and opportunities of Canadian society.

2. Educational opportunity objective: to facilitate the access of all qualified and interested Canadians to formal learning by reducing barriers due to socioeconomic status or to membership in groups that are not fully served by the existing educational system, and to reduce financial hardship resulting from participation in the education system.

3. Mobility objective: to minimize any barriers that might prevent Canadian post-secondary students, teachers and graduates from studying, training or working wherever they wish in Canada.

4. Employability objective: to promote a post-secondary capacity, in those areas of post-secondary activity related to the provision of occupational skills required by the Canadian labor market, which is responsive in providing Canadians with the opportunity to obtain the qualifications required for occupations characterized by a high degree of inter-regional and international mobility.

5. Research objective: to encourage the development of researchers and research knowledge and capacity in the post-secondary education system, consistent with the general research and development needs of Canadian society or in order to provide solutions to problems arising in areas of national concern.

6. Official languages in education objective: to provide opportunities for Canadians to increase their knowledge of Canada's official languages through formal learning and for members of the minority official language group in each region to be educated in their own language.

7. Canadian understanding, citizenship and cultural identity objective: to increase through formal learning the knowledge and understanding Canadians have of themselves and their environment, with particular concern for the cultural diversity of Canada, and to stimulate and maintain a sense of Canadian citizenship.

8. International relations objective: to promote Canada's international interests in matters relating to education including: provision of links between the education system of Canada and of other countries; promotion of a better knowledge abroad of Canada and its people; encouragement of international studies in Canada and of international joint research and scholarly activities; and provision of policies and programs relating to foreign scholars and students in Canada.

9. Federal direct schooling objective: to develop knowledge, skills and critical capacity among groups whose education is a federal responsibility, through financing and/or management of schools and other educational establishments.

10. Needs of the federal government as an employer objective: to promote an adequate supply of personnel with skills, knowledge and capacities needed for an effective public service, including appropriate official language capabilities.

II. National Training Act[2]

On October 4, 1982 Canada Employment and Immigration Minister Lloyd Axworthy and Chairman of the Cabinet Committee on Employment Development Grace McCarthy, Labor Minister Robert McClelland and Education Minister William Vander Zalm, signed a three year joint federal/provincial agreement under the new National Training Act. The goal of this agreement is to provide for the occupational training of the labor force, and thereby better meet the needs for skills created by a changing economy and to increase the earning and employment potential of individual adults. Specific training objectives are:

a) to facilitate an adequate supply of skilled labor to meet the needs of the labor market;

b) to emphasize training for occupations of national importance and/or occupations of regional importance as identified by joint consultation;

c) to provide appropriate training to enhance the employability of those adults who are unemployed or only marginally participating in the labor force;

d) to undertake appropriate retraining for adults to provide them with skills to meet altered occupational needs resulting from industrial and technological change;

e) to provide for the continued improvement of linkages between basic educational upgrading and specific occupational skills training.

The agreement provides for the establishment of the Labor Market Needs Committee of British Columbia as the designated vehicle of

2. This section adapted from: The Agreement Between the Government of Canada and the Government of the Province of B.C., pursuant to the National Training Act, 82:10:04.

consultation on labor market policy between the two orders of government. The committee's purpose is to identify labor market needs and priorities in B.C. as well as to assess training needs associated with occupations of national and/or regional importance. The identification of training requirements will be based on existing and projected occupational imbalances (i.e. skill shortages and joblessness), taking into consideration the adaptation of the labor force to new technologies and the needs of special groups of adults and the unemployed.

An interim list of designated national occupations has been established by the Canada Employment and Immigration Commission, pursuant to the Act. A more comprehensive list will be created in January 1983, following consultation with the newly created Labor Market Needs Committee. This interim list has been restricted to a limited number of occupations in which future skill shortages are such as to clearly require early designation in order to enable selective stimulation of future training capacity to commence immediately. Designated occupations of relevance to BCIT include:

1. Physical Sciences Technologists and Technicians (forest products, petroleum)
2. Draught persons
3. Architectural and Engineering Technologists and Technicians
4. Systems Analysts, Computer Programmers and Related Occupations
5. Chemical, Petroleum, Rubber, Plastic and Related Materials Processing Occupations.
6. Electronics

The remaining designations are for a variety of highly skilled blue collar occupations such as machinists, welders, mechanics etc.

It should be noted that the occupations listed above are identical to those identified in the preceeding labor force section as high vacancy growth occupations which are also projected to experience future skill shortages. Historically, information on labor demand by occupation has been limited in scope, quality and availability. Detailed data at the occupational level has been scarce and inadequate. The methodology used for occupational employment projections had, heretofore, been questionable since no comprehensive model had been developed to determine the specifications of demand. Under the auspices of the National Training Act, the Canadian Occupational Projection System (COPS) has been developed to fulfill the need for better manpower projections through a comprehensive approach.

Federal funds with which to implement the National Training Program are being provided under three components.

1. The Institutional Training component of the program is funded in B.C. at $51,618,000 in 1982-83. Through the resources and facilities of the provincial colleges and institutes it will provide training for 25,000 adults in occupations ranging from heavy equipment operator to junior computer programmer. The training breakdown is 12,000 Apprentices, 3,000 Basic Training Skills Development, 2,300 Language Training, and 4,700 Pre-employment. The Canada Employment Centre shall be the referral

source for trainees and shall designate the appropriate training site for the course in question, based on curriculum outlines to be developed by the province. Income support for trainees is available in the form of Unemployment Insurance benefits, estimated at $18 million in 1982-83, and training allowances, estimated at $13 million for the year. The 52-week limit has been repealed on courses providing high-skill training for occupations of national importance.

2. The Skills Growth Fund has been established to provide for capital funding of new facilities of up to $40,000 per student place in non-university designated national occupations in both provincial and non-profit facilities. Funds may also be used for the modernization of facilities and equipment, for initial operating costs of courses and for course development costs. Application shall be made to the Canada Employment and Immigration Commission in proposal format.

3. The Industrial Training component has been allocated $17 million for remunerating employers for operating or arranging the training, retraining or occupational upgrading of employees. Industry is allowed to contract at provincial training institutes to provide the necessary employee training. Of this, $10 million will be available in 1982-83 for General Industrial Training to train 9,500 workers in medium to high skill occupations. A total of $7.5 million will be devoted to Critical Trade Skills

Training, involving some 1,500 trainees in long-term training for highly skilled occupations (electronics technician, heavy duty mechanic, machinist).

There is significant potential for BCIT's participation in the Institutional Training and Skills Growth Fund components of the National Training Act. Since many of the Institute's technological programs provide training for the designated occupations of national and/or regional importance, it is essential to make the applicable curriculums known to the Canada Employment and Immigration Commission for referral of trainees. The Skills Growth Fund is of even greater significance since it would afford BCIT the opportunity to further enhance its facilities, equipment and courses for the training of technologists.

III. Economic Development Policy[3]

In June of 1981 the Government of Canada established an ad-hoc committee to determine policies and priorities for national economic development. The first task was to identify strategic development opportunities to provide direction for the government's efforts at economic renewal. The following are the opportunities which the government views as providing the greatest potential for growth:

3. Government of Canada, Economic Development for Canada in the 1980's, November 1981.

1. The development of natural resources, particularly energy-related, was determined to be the leading opportunity. Developments in this area will require massive investments in productive capability and in the transportation industry's capacity to ship bulk commodities.
2. Exceptional economic development opportunities were cited within the manufacturing area, both to supply machinery, equipment and materials needed for resource development and to extend the further processing of resource products beyond the primary stage.
3. The third direction of growth was ascertained to be the innovation and exploitation of advanced technology and high productivity goods and services. This includes the development and commercialization of new products, adaptations of Canadian and foreign technology and the provision of high technology services such as project management, engineering, industrial design and computer applications. These developments will assist in the revitalization of the manufacturing industry through progressive reorientation and restructuring of the entire sector. Industrial renewal is of strategic importance in addressing the structural problems of the economy, inclusive of productivity and inflation.

In light of these opportunities, the following implications for national policy were established:

1. Canadian economic development in the 1980s will be dominated by the continued development and expansion of the resource-based industries and the revitalization of industrial capacity towards specialized international competitiveness.
2. The process and pace of resource development and industrial restructuring will be of critical importance to the future strength of the economy.
3. Economic development policy must be viewed in both national and regional terms and set in the context of development in the international marketplace.
4. The management of change in the 1980s is of crucial importance to future prosperity. Policies must focus upon industrial innovation, restructuring and improving the process of adjustment in all industrial areas, including greater diversification of industrial activity. The transportation network must respond to the demands that will be placed on it, requiring advanced planning. The changing demand for labor, in terms of job availability and skill requirements, present new challenges for the education and training systems.

In directing federal policies and programs to the strategic opportunities in Canadian economic development, the federal government has identified five priority areas:

1. Industrial development - the objectives in this area are to ensure that industrial benefits are derived from major investment projects, that innovation becomes a major factor, and that adjustment to market forces occurs in a healthy and productive way. In response, the government has established a new office, called the Department of Regional and Industrial Development, a unification program which replaces the Departments of Regional Economic Expansion plus Industry, Trade and Commerce. This office provides a mechanism for the coordination of federal activities and a focal point for interaction with the private sector. Robin Dodson is the newly appointed Executive Director of this office in B.C. He sees the new department as providing a vehicle for implementation of "The Ideal Program". In his own words,

> "The Ideal Program will be designed to address the problems of industrial development from the earliest stages - feasibility studies, research and development, process technology, pilot projects, technology transfer to commercial production scale, market identification, market development activities - through to middle stages - the establishment of new production facilities, the improvement of productivity of existing facilities - and right to the so-called back-end purposes of helping industry restructure if they happen to mature."[4]

4. Moyan, Peter "The Feds: So That's What Ottawa Thinks", B.C. Business Magazine, Vol. 10, No. 8 P.31, October 1982

In addition, the federal government has committed itself to a major increase in the level of research and development activity. The Industrial Opportunities Program will coordinate the targeting of research and development funds to the most promising areas of industrial strength. Finally, the Enterprise Development Program and the Labor Adjustment Program will facilitate the process of transition in the area of industrial adjustment. The intent is to assist firms and workers in adjustment and restructuring to meet changing competitive conditions.

2. Resource Development - The federal government will be undertaking new initiatives in support of five big resource-based sectors. The National Energy Program is designed to achieve self-sufficiency in oil by 1990. An Agri-Food strategy is being developed to expand international marketing. The fisheries sector is targeted for increased expenditures on the development and management of marine and aquatic resources. An increase in forestry research and development in the areas of production, protection, basic research, harvesting and forest products will be supported by the government. Finally, the government will continue to provide strong support for research and development in the mining industry.

3. Transportation - Transportation systems must be modernized to move much larger volumes of bulk commodities to markets. The problems are most critical in the west, where capacity constraints will be evident by 1985 unless major investments by the railways proceed.

4. Export Promotion - Trade competitiveness is essential to strong export performance. The government is strengthening commercial representation in foreign market posts and enhancing the Program For Export Market Development.

5. Human Resources Development - The government is committed to resolving the imbalance between skill shortages and unemployment. Employment opportunities will require higher levels of education and skills due to such factors as micro-electronics technology and mega-project developments. Education and training institutions must be able to prepare sufficient youth to assume the skilled and professional roles which the economy will need and must provide adequate facilities for re-educating and retraining adult workers for new employment opportunities. The previously referenced National Training Act is the government's programmatic response to the imbalance problem.

IV. Science Policy

In recognition of the crucial importance of science and technology to economic growth, Prime Minister Pierre Trudeau recently appointed Donald J. Johnston as both Minister of State for Science and Technology and Minister of State for Economic Development. The Prime Minister views the integration of these policy sectors as the first step in an overall strengthening of government organizations related to science and technology. M.O.S.S.T. will remain a separate Ministry and Mr. Johnston will also report to Parliament on behalf of the National Research Council, the Natural Sciences and Engineering Research Council and the Science Council of Canada. As a result of these developments, science and technology have taken on a more central role in the federal government.[5]

The federal government has set a national goal of roughly doubling the effective spending on research and development over the next five years. It's objective is to reach a level of 1.5% of GNP for total government and non-government investment in research and development by 1985. This target is to be achieved by promoting and exploiting marketable technological opportunities which will result in internationally competitive industries, and by promoting the transfer and diffusion of industrial

5. Ministry of State, Science and Technology Canada, Science Notes, Fall 1982 Vol. 1 No. 3., p.1.

technology. The ultimate aim is to double the contribution of the technology - intensive industrial sector to Canada's GNP within 10 years.[6]

Expenditures on research and development have been increasing markedly within both the public and private sectors. Industry's investment in research attained its highest level in more than a decade during 1981, reaching 1.13% of the GNP. The private sector commitment represented 43% of the total research and development undertaken in the economy. Industry's expenditures for 1982 on research and development represent a 21.8% increase over last year. Research and development activities of the federal government in 1982-83 are set at $2.9 billion, a 13% increase over the previous year. Current federal expenditures include $39 million for research and development performed in industry, a 15% increase over last year. There is clearly a growing commitment to research and development investment.[7]

In the November budget papers the government defined areas of priority related to economic development, as described in the preceeding economic development policy section. Central to the new government initiatives in these priority areas is the need to increase research and development in order to enhance economic performance. Economic recovery has been integrally linked to the adaptation of advanced technology within the industrial sector.

---

6. National Research Council of Canada, The Urgent Investment - Year Two, 1982, p. 20

7. Ministry of State, Science and Technology Canada, Science Notes, Fall 1982 Vol. 1 No. 3., p. 6

Mega projects are another area which will place enormous demands on technological capabilities. The government reports that major capital projects to be implemented in Canada to the year 2000 will have a total value approaching $440 billion. Their success will depend to a large extent on there being a prepared technology base, particularly in the areas of process, material, equipment management, design and construction, manufacturing and electronic system technologies. As pointed out by the government task force on mega projects, Canada will have to make conscious efforts to just maintain its competitive position in the world.[8]

The National Research Council is the Federal government's primary research laboratory. It's primary thrust for 1980-85 is to aid the technology-intensive sector of secondary industry through research and development. There is a direct relationship between most of N R C's activities and the government's priorities for economic development. Priority projects in 1981/82 included energy projects and related research and development support programs, fusion programs, CAD/CAM development, robotics, rail vehicle research and advanced fuels. Priorities for 1982/83 include the establishment of a National Institute for Advanced Manufacturing and Production Technology in Manitoba, examining the feasibility of establishing an Institute for Cold Regions Engineering in Alberta and a program of Engineering Development for Atlantic Canada. Furthermore, the NRC

8. National Research Council of Canada, The Urgent Investment - Year Two, 1982, p. 21

has stated that one of the most critical constraints to the achievement of its research goals will be the availability of sufficient numbers of adequately trained scientific and technical personnel and has, resultingly, identified manpower training as an urgent priority for 1982/82.[9]

On March 17, 1982 the Minister of Labor created the Task Force on Microelectronics and Employment to examine the implications of microelectronic technology on the workplace. The mandate of the Task Force was directed toward examining the methods by which microelectronic technology is being incorporated into the workplace, the extent to which this has already occurred, and the implications of this process on working persons. The product was a series of specific recommendations for policy change by which to maximize the positive impacts and minimize the negative consequences of the micro-chip "revolution". Of particular interest are the recommendations related to the effects of microelectronics on training and education.[10]

1. The Task Force recommends public support for the design and development of software programmes to meet the special training needs of socially disadvantaged and disabled people.

---

9. National Research Council of Canada, The Urgent Investment - Year Two, 1982, p. 27

10. This section adapted from: Labor Canada Task Force on Microelectronics and Employment, In the Chips: Opportunities, People Partnerships, Minister of Supply & Services Canada 1982, Cat. No. L35-1982/1E

2. Recognizing that the effects of microtechnology on the family and other institutions is of concern to grass roots organizations, the Task Force encourages these groups to form a pan-Canadian network to develop new concepts of learning and social adaptation.

3. The Task Force recommends that federal and provincial ministers help ensure that Canadian education policies and programmes emphasize flexibility and adpatability to change by promoting a philosophy of life-long learning and the teaching of such life-time skills as problem solving and decision making, by reviewing:

   a) educational systems, to ensure equitable educational opportunities throughout Canada based on co-operatively established national educational guidelines;

   b) current educational policies and programmes in light of the challenges presented by microelectronic technology, including the comprehensive integration into the educational system of computer-aided learning.

4. Furthermore, the federal and provincial governments should:

   a) encourage the continued development of educational, including technical, institutions; and

   b) provide additional funding to educational, including technical, institutions for the purchase of microelectronics equipment needed for instructional purposes.

5. The Federal government should establish a Registered Training and Education Leave Saving Plan to help individual Canadians take the initiative in planning and paying for their educational and training needs.

6. Governments, labor unions, employers and educational institutions should view educational opportunities, including training,

retraining and higher education as shared cooperative responsibilities, which would include:

a) the training of displaced workers to assist them to develop new and marketable skills;

b) the desirability of negotiating educational leave provisions in collective agreements;

c) preparation of appropriate information and orientation material for dissemination in the educational system to achieve a wide-spread level of microelectronics awareness.

7. Appropriate school authorities should attempt to ensure that sufficient people are educated for the evolving computer-related occupations and the microelectronic/information age by:

a) adding new courses to school curriculum to ensure computer literacy;

b) promoting a greater awareness of the role played by governments, industry and labor in the development and implementation of new technologies.

8. Educational authorities, publishers and educational media should work together to eliminate sex-stereotyping from all course materials and content in order to reduce the cultural barriers which impede the participation of women in high technology occupations.

Conclusions

1. The continuous growth of the Canadian economy has been determined to be dependent upon the timely development of the skills and knowledge of the labor force. Accordingly, the national post-secondary education objective regarding employability is to promote a capacity which is responsive in providing skill training in critical occupations. Skill shortages are primarily manifested in those occupations involving the application of technological skills.
2. The National Training Act in B.C. targets provincial colleges and institutes as the training source. Having repealed the 52 week limit, this enables BCIT to participate as a provider of training for occupations of national importance. Interimly designated occupations of relevance include almost the entire spectrum of programs within the Engineering Division as well as the Computer Systems and Operations Management programs of the Business Division. In the Health Division Biomedical Electronics, in particular, is anticipated to be designated in the near future. Due to the relationship between BCIT's curricula and skills required for designated occupations, the Institute should be able to participate in the N.T.A. depending upon its ability to accept new students. Participation in the Skills Growth Fund component could benefit the Institute by providing support for the establishment or improvement of facilities, equipment and/or programs.

3. The decline of productivity in the Canadian economy has emphasized the crucial importance of science and technology to economic growth. This is evident throughout the Federal government's economic development policies and programs, wherein research and development activities have received priority consideration. The government has, in effect, challenged the education and training system to meet the skill needs of the evolving "high tech" economy. This challenge has yet to be supported by increased levels of funding for education. The National Training Act alone is not sufficient to provide for the training needs of the Canadian labor market. It is necessary for the government to examine closely its investment in the future and increase its support in proportion to the magnitude of the task. If education and training is to be an essential priority, then this should be reflected in the fiscal appropriation and allocation process. Response is contingent upon capacity, and capacity is contingent upon adequate support.

PROVINCIAL POLICY AND LEGISLATION

I. B.C. College and Institute System Objectives 1982-87[1]

The British Columbia Ministry of Education has recently issued a second draft of its "mission, goals and objectives" paper following consultation on the March 31 draft. The document is intended to serve as the basis for the preparation of long and short term plans by each of the constituent parts of the college and institute system. These plans, in turn, are expected to form the basis for budgetary program and capital submissions by each of the institutions. Table 17 depicts the proposed operational framwork which is proposed to govern public post-secondary education in the 1982-87 period.

Few extensive changes have been made in the redrafted version of the Objectives document. The document consists of an overall mission statement, eight goal areas and 30 objectives consistent with the goals. The existence of budgetary restraints is repeatedly emphasized, and has been incorporated in the Mission Statement. Also highlighted is the critical need for extensive skill training of the labor force in the face of continued technological development, a theme consistent with rational policies and priorities.

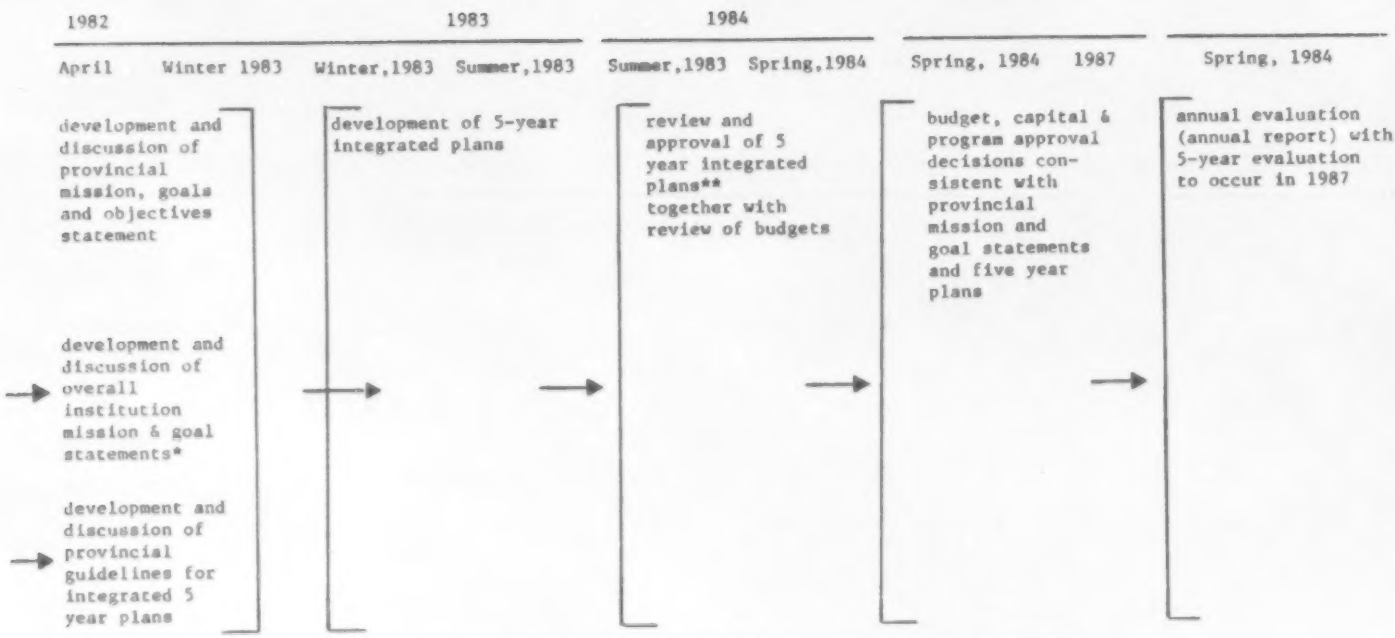
---

1. This section extracted from:
Draft #2: Integrated Five Year Planning for the British Columbia College and Institute System: Part I. System Objectives 1982-87, Ministry of Education Post Secondary Department.

TABLE 17

BACKGROUND DOCUMENT #2

PROCESS CHART: PROPOSED OPERATIONAL FRAMEWORK
FOR COLLEGE AND INSTITUTE SYSTEM


1982
1983
1984
April
Winter 1983
Winter,1983
Summer,1983
Summer,1983
Spring,1984
Spring, 1984
1987
Spring, 1984
development and discussion of provincial mission, goals and objectives statement
development and discussion of overall institution mission & goal statements*
development and discussion of provincial guidelines for integrated 5 year plans
development of 5-year integrated plans
review and approval of 5 year integrated plans** together with review of budgets
budget, capital & program approval decisions consistent with provincial mission and goal statements and five year plans
annual evaluation (annual report) with 5-year evaluation to occur in 1987

* Mission and goal statements of institutions should include a general description of program emphasis

** Integrated plans are intended to include 5-year educational, capital and financial plans and to address alternative futures

NOTE: This chart is a simplified representation of the process. At various checkpoints in the process, consultation and review to ensure consistency with provincial mission, goals and objectives are intended to take place.

The major principles underlying the goals and objectives set forth in the document are as follows:

a) a continuing commitment to lay involvement at the board and council levels, with particular emphasis on the role of boards in local and/or constituency needs assessment and related decision making.

b) a modified concept of comprehensiveness, providing for co-operation among colleges (particularly neighbouring colleges) and the institutes, plus the possible assumption in certain program areas of provincial roles and responsibilities by both colleges and institutes.

c) a renewed commitment to quality, and to relevance as a key aspect of quality, with the recognition that such a commitment may require the reallocation of some resources and the elimination or transfer of some programs.

d) a determination by government to develop macro-level information on skill shortages and needs, information which can be combined with information gathered at the local and national levels and used as the basis for determining program priorities.

e) a continued but selective commitment to the implementation of lifelong learning opportunities, broad access, and social development goals, while recognizing the primacy given to needs of the high priority programs.

f) a demonstrated attention to cost-effectiveness while bearing in mind the need to maintain a proper balance between cost-effectiveness and quality of instruction.

g) an awareness on the part of all components of the system (Minister, Ministry staff, councils, colleges and institutes) of the need to base future planning on the mission, goals and objectives as formulated in the accompanying document.

h) an expectation that all components of the system will be accountable for the attainment by 1987, of all applicable objectives described in the following document.

Table 18 presents the 8 goals of which "Occupational and Manpower Development" is to receive pre-eminent consideration. Accordingly, the goals under "Lifelong Education" and Accessibility" are subservient to meeting skill shortages and addressing other manpower problems. The document makes constant reference to a system-wide effort, requiring the cooperation and coordination of all component parts.

B.C.I.T.'s role in the college and institute system has yet to be clarified in terms of Ministry priorities. Table 19 provides a summary of recommendations and subsequent comments relating to the twelve goals of the Institute. Included are the comments received from the Ministerial Task Force and Committee, and BCIT's response to each and the BCIT Business Task Force. Virtually no policy statement concerning BCIT programs with the exception of the Bachelor of Technology issue, has been produced by the Ministry.

TABLE 18

PROVINCIAL POST SECONDARY GOALS

GOAL A: GOVERNANCE

THE SYSTEM WILL OPERATE THROUGH AN ORGANIZATIONAL STRUCTURE THAT WILL, THROUGH ITS INDIVIDUAL COMPONENTS, DEVELOP, CO-ORDINATE AND DELIVER EDUCATION TO ACHIEVE COMMON PURPOSES

GOAL B: COMPREHENSIVENESS

THE SYSTEM WILL BE COMPREHENSIVE BY PROVIDING DIVERSE PROGRAM-ORIENTED LEARNING EXPERIENCES TO MEET INDIVIDUAL, ECONOMIC AND SOCIETAL NEEDS

GOAL C: QUALITY

THE SYSTEM WILL ENHANCE THE QUALITY OF EDUCATION, CONSISTENT WITH THE DIVERSITY OF INDIVIDUAL, ECONOMIC, AND SOCIETAL NEEDS, BY DEVELOPING AND IMPROVING COURSES AND PROGRAMS AND BY IMPROVING INSTRUCTIONAL AND SUPPORT SERVICES.

GOAL D: OCCUPATIONAL AND MANPOWER DEVELOPMENT

THE SYSTEM WILL STRIVE, IN CO-OPERATION WITH PROVINCIAL AND NATIONAL AGENCIES, BOTH PUBLIC AND PRIVATE, TO DEVELOP THE OCCUPATIONAL SKILL POTENTIAL OF INDIVIDUAL BRITISH COLUMBIANS IN ORDER TO FOSTER ECONOMIC DEVELOPMENT AND TO ENABLE INDIVIDUALS TO PARTICIPATE IN THAT DEVELOPMENT IN A SATISFYING MANNER.

GOAL E: LIFELONG EDUCATIONAL OPPORTUNITIES

THE SYSTEM WILL FOSTER, IN CO-OPERATION WITH PUBLIC AND PRIVATE AGENCIES, A FULLER LIFE FOR BRITISH COLUMBIANS AND GREATER CONTRIBUTIONS TO SOCIETY, THE ECONOMY, AND THE LABOUR FORCE, BY PROVIDING INDIVIDUALS WITH ENCOURAGEMENT AND LIFELONG OPPORTUNITIES TO CONTINUE THEIR EDUCATION.

GOAL F: ACCESSIBILITY

THE SYSTEM WILL STRIVE FOR EQUITY IN THE PROVISION OF POST-SECONDARY EDUCATIONAL OPPORTUNITIES FOR INDIVIDUAL BRITISH COLUMBIANS.

GOAL G: SOCIAL DEVELOPMENT

THE SYSTEM WILL ENHANCE, IN CO-OPERATION WITH PUBLIC AND PRIVATE AGENCIES, THE CULTURAL, SOCIAL, AND RECREATIONAL LIFE OF THE PROVINCE, PRIMARILY THROUGH THE PROVISION OF EDUCATIONAL PROGRAMS AND SUPPORT SERVICES.

GOAL H: ACCOUNTABILITY

THE SYSTEM WILL BE ACCOUNTABLE TO THE PUBLIC FOR THE PROVISION OF EDUCATION CONSISTENT WITH THE SYSTEM MISSION AND GOALS STATEMENT, IN AN EDUCATIONALLY AND FISCALLY RESPONSIBLE MANNER.

TABLE 19

BCIT GOALS: A SUMMARY OF RECOMMENDATIONS AND COMMENTS

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS (MAY 1981)	BCIT RESPONSE (NOVEMBER 1981)	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT. (JULY 1981)
1. The Institute will continue to make the programs leading to the granting of the National Diploma of Technology its main purpose.			Endorsed
2. The Institute will maintain the wide range of Diploma level specialization by continuing to offer both entry and graduating level courses.	The Committee to Consider Extending.... seriously examine the program mix at BCIT in terms of which programs could be offered at other colleges so that more specialized technological programs could be offered at BCIT. (p.37)	"A" Issue BCIT examine its present program mix and report to the Minister of Education BCIT report to the Minister on what specialized technological programs should be offered. BCIT, in cooperation with other groups, identify future areas of specialized technology.	Concentrate on technologies falling in general areas of engineering, sciences and health, excluding general nursing. New technology programs unique to B.C. should be located at BCIT unless special considerations dictate otherwise.
3. The Institute will maintain the quality of both its programs and the standards it sets for a National Diploma of Technology.	i) Ministry of Education establish a policy that professional development of faculty... be compulsory and that sufficient funds (10% of salary budget plus benefits) be earmarked for this purpose. (P.44)	"A" issue Agree - funds be made available by Ministry and professional development be made available to all BCIT faculty and technical staff.	Endorsed
	ii) The Ministry of Education provide funds to upgrade the existing capital equipment for technological programs up to industrial standards (P.46)	"A" issue Agree	Committee shares BCIT's concern regarding obsolete equipment and acknowledges that the magnitude of the problem may well be as indicated.
	iii) The Ministry of Education adopt an amortization formula for replacing most capital equipment, of 10 to 15% per annum and for replacing computer electronics and intelligent equipment, of 20% or an overall formula of 15% per annum. The Ministry of Education maintain debenture funding for new capital acquisitions (P.46)	"A" issue Agree	A detailed inventory of equipment and materials should be prepared and a joint (BCIT & Ministry) assessment of the equipment and materials be made. Based on this information, a submission for new capital equipment and materials should be submitted through the normal funding channels. A detailed study should be carried out, by government officials, to establish an appropriate formula and procedure for amortization of capital equipment
	iv) The Ministry of Education provide funds to upgrade technical library holdings and increase the book acquisition percentage of the library service to accommodate new and growing needs for technical acquisitions (p. 46)	"A" issue Agree with the intent but must include more than just library holdings (i.e. library support)	

BCIT RESPONSE/COMMENTS (APRIL 1982)	BCIT RESPONSE/RECOMMENDATIONS (APRIL 1982)	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS (JUNE 1982)
1. Cont'd	That BCIT offer full and part-time programs ranging in certification from a one year certificate to a three year Bachelor of Technology, while maintaining a solid diploma activity base, accounting for 70-80% of the full-time student enrolment.	
2. Cont'd. Agree, we urge the Minister to ask his senior staff to meet with BCIT to prepare guidelines for implementation.	a) That the present comprehensive diploma programs in business, health and engineering be maintained as the foundation of the polytechnic. b) That BCIT, as a polytechnic consider broadening its spectrum of diploma programs with emphasis on further second year specialization. c) That some of the first year programs could be, and should be, offered by colleges. With this integrated college and BCIT approach, a clear program articulation is imperative.	a) The Business Division needs to collaborate more effectively with the colleges, but no presently successful program should be eliminated unless a similar program of equal recognition exists within the province. b) The academic divisions (Engineering, Health, Business) within the Institute are encouraged to explor. opportunities for integrated, cross-divisional programs, and the Institute should establish a committee for this purpose.
3. Cont'd We urge the Minister to take whatever action is necessary to have our capital update proposal approved by Treasury Board. We recommend that an appropriate capital financing system be implemented immediately	a) That BCIT, as a polytechnic develop admissions requirements that would result in a highly selective enrolment, leading to the effective placement of graduates. b) That industry be a partner in curriculum design and evaluation and in review of competency criteria.	Provision should be made to encourage faculty to periodically return to industry on leave to update their expertise. The business community has an important role to play in facilitating this occurence.

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS	BCIT RESPONSE	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT.
4. The Institute will continue to develop post-diploma programs, both inter-disciplinary and advanced.	The Ministry of Education fund a program designed to prepare a graduate technologist for the examications leading to qualifications as a professional engineer (P.41)	"B" Issue Agree (see also BCIT Response under Goal 7.) The Minister of Education meet with representatives from the Association of Professional Engineers of B.C., the Society of Engineering Technologists of B.C., BCIT and appropriate colleges and institutes to review background to this recommendation and to discuss its implementation.	There is a definite need for post-diploma training in certain technological areas. Post diploma programs should only be offered when there are clearly defined needs. These programs would be most beneficial to those students who have been working in related fields for at least 1 year subsequent to receiving a Diploma.
5. The Institute will continue to develop its programs in response to the needs of business and industry and industry's need for accredited graduates. It will achieve this by using the guidance of the departmental advisory committees.	The Ministry of Education require all technological programs in engineering, science and health science be accredited (P.42)	"B" issue Agree The Minister of Education delegate his senior officials to prepare an accreditation plan for technological programs and that BCIT be consulted on its development.	Endorsed
6. The Institute, while maintaining the BCIT program structure, will respond to the needs of students by providing breidges among various academic, vocational and career programs; the work force on the one hand and the Institute on the other.	The Ministry of Education fund the development of access courses that will enable an individual to move between vocationa, technical and university programs with a minimum of time loss. (P.41)	"B" Issue Agree Minister of Education appoint a special study group consisting of members from universities, institutes and colleges to report on what is needed to implement such a process of access.	Endorsed

BCIT RESPONSE/COMMENTS	BCIT RESPONSE/RECOMMENDATIONS	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS
4. Where there is a fully justified industrial requirement for post-diploma training at BCIT, we request the Minister to provide the necessary support, independant of the present 2-year Diploma of Technology programs.	a) That one year of cooperative education or acceptable job experience be recommended as a requirement. b) That BCIT, as a polytechnic increase its offering in advanced inter-disciplinary study.	
5. BCIT Business Division struck a task force of senior people in industry to recommend the future role of the BCIT Business Division within the post-secondary business education system. On 82:01:04 the Board of Governors requested the Minister of Education and the Minister of Universities, Sciences and Communications to strike a task force to study business education at the post-secondary level.		a) A Business Education Advisory Board is essential to address the problems of coordination and rationalization besetting the provincial post-secondary system. b) The Business Division must be preserved intact in any comprehensive system of post-secondary business education within the province. c) A closer working relationship with industry will be necessary to stay abreast of rapidly changing job environments. d) The Business Division must seek to improve its collaboration within the post-secondary system through closer working relationships with the Ministry of Education.
6. BCIT prepared a position paper on an integrated network of secondary schools, institutes, colleges and universities. A new program "BRIDGE" was initiated by BCIT Distance Education, providing multi-delivery, cooperative, basic resource training in conjunction with community colleges, Open Learning Institute, industry and labour.	That BCIT, as a polytechnic, place an increased emphasis on cooperative education as an integral part of Diploma of Technology training.	a) Every Business program should be available on a full or part-time basis, day or evening, or a combination thereof. b) Reasonable transfer credit toward degrees should be pursued on behalf of diploma graduates.

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS	BCIT RESPONSE	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT.
7. The Institute will plan for the development and implementation of Bachelor of Technology degree programs where there are indications of need for such programs.	i) The Ministry of Education not sanction or empower any college or institute to offer a baccalaureate degree in technology as a credential. (P.40)	"B" Issues i) BCIT will continue its post-diploma development activities as appropriate and as recommended by the Task Force. When BCIT considers a program to be equivalent to a degree program, the Minister entertain our request for permission to grant degrees.	**No need for a baccalaureate of technology in B.C. perceived at this time** Arrangements for transfer to university programs should be actively pursued by both the Academic Council and BCIT.
	ii) The Ministry of Education inform the Minister of Universities, Science and Communications of the possible need (for training to the baccalaureate level) in analytical chemistry, control engineering and quality assurance.)P.40)	These areas would be inappropriate for a university to pursue, since industry wants a post-diploma BCIT program, building on what has been learned at BCIT and in industry The Minister of Education encourage BCIT to develop a proposal covering the areas of analytical chemistry, control engineering and quality assurance for post-diploma programs.	

BCIT RESPONSE/COMMENTS	BCIT RESPONSE/RECOMMENDATIONS	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS
7. When there is a need, BCIT is prepared to work with the Ministry to fill it. The universities and BCIT generally agree that a jointly developed interface program between their engineering schools would expedite transfer arrangements. The Committee recommendations would be practical and achievable if transfer policies became consistent and flexible.	a) The BCIT Board of Governors felt that the committee did not adequately research or deal with the topic (that is, to consider extending technological training at BCIT beyond two years.), therefore BCIT finds it necessary to once again put our case forward. b) That BCIT, as a polytechnic, be given authority to offer programs to the Bachelor of Technology level with advanced programs being introduced, based on discerned needs of industry. c) That only students who have successfully completed a Diploma of Technology or equivalent be accepted for the Bachelor of Technology program.	

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS	BCIT RESPONSE	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT.
8. The Institute will offer appropriate continuing education courses and certificate programs to meet the increasing needs of the people of B.C. in their professional and career development, for part-time and life-long learning. Increasing opportunities to assist career changes will also be provided.	i) The Ministry of Education fund part-time programs leading to a college or institute certificate in an equivalent manner to full-time programs. (P.38) ii) The Ministry of Education provide student aid to part-time students on a prorated basis (P.38) iii) The Ministry of Education create a control registry and program clearing house for part-time students... in technological subjects and that the registry and programs be coordinated by the Ministry of Education (P.39)	"B" Issues i) Ministry should fund part-time programs to the point where services equal those of full-time programs. Student fees should not be the same. Instead we should fund the development of individualization of courses. The Ministry of Education authorize funding to BCIT for the preparation of a plan showing individualization. "B" Issues ii) Agree - at a level of service comparable to that of full time students. "C" Issue iii) Not convinced that it is necessary or desirable.	Endorsed
9. The Institute will continue to co-operate with western provinces by offering specialized programs which respond to the needs identified by Western Canada Post-Secondary Coordinating Committee.			Endorsed

BCIT RESPONSE/COMMENTS	BCIT RECOMMENDATIONS	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS
8. BCIT is specifically suited to providing an array of career educational services and we urge the Minister to so recognize BCIT as a provincial institute, which is the key link in development of provincial technological education, working closely with secondary schools, colleges, institutes and universities.	That BCIT, as a polytechnic, will offer all levels of education through the Continuing Education Division.	The Business Division should assume full authority over all Business credit courses and programs delivered by Continuing Education and Industry Services.
9. Cont'd	That the Ministry give consideration to consulting with the Council of Ministers to determine those programs that BCIT as a polytechnic could offer for western Canada.	

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS	BCIT RESPONSE	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT.
10. The Institute will provide, by means of innovative instructional methods, distance learning, continuing education, college transfer programs and co-operation with other educational institutions, opportunities for technological education for people from all regions of B.C.	i) The Ministry of Education designate area centres responsible for the development and delivery of a specified cluster of technological programs: Southeast, Interior, North, Vancouver Island and Lower Mainland. Where an area centre offers a unique technological program, it be obligated to provide that program on a provincial basis. (P.35) ii) The Ministry of Education continues BCIT as the main polytechnic institute in B.C. (P.36) iii) The Ministry of Education designate BCIT as the centre for technological education in the Lower Mainland and that BCIT be designated as the primary medical technology centre for the Province. (P.36)	i)"A"Issue - agree. Ministry of Education support the College of New Caledonia and BCIT model for development of area centres as being appropriate. A key element is the joint-employee concept. This will be pursued after consultation with all relevant bodies. ii) "A" issue -agree iii) "A" issue - agree and BCIT shall maintain an appropriate level of programming, including all of the current health technologies.	Endorsed but relationship among BCIT, Open Learning Institute, Knowledge Network should not be competitive.
11. The Institute will emphasize its need to advise and co-operate in the development of secondary school curricula and programs leading to career and technological education.	The Ministry of Education increase the resources available to colleges and institutes for vocational counselling and require that a program be developed to inform school students of career knowledge, work environment and entrance requirements for technological fields as early as Grade 8. (P.26)	"B" Issue Substitute "career" for "vocational". Ministry should provide additional travel funds to institutes and colleges for trained resource people to visit schools. BCIT should develop appropriate up-to-date factual audio-visual presentations. Ministry should provide funds to investigate other modes of delivery (eg. Knowledge Network) to provide more individualized career counselling and to disseminate program information.	Endorsed

BCIT RESPONSE/COMMENTS	BCIT RECOMMENDATIONS	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS
10. An especially important recommendation since it concerns BCIT's proposed role as an open technical institute. Discussions with Open Learning Institute have been held and agreement reached that both could work together effectively. Similar discussions are planned with Knowledge Network.	That BCIT, as a polytechnic, will continue to emphasize its provincial focus.	a) The Business Division should engage in a consultative process with colleges and institutes within the system to establish a Business Core Curriculum with common standards. b) Useful linkages must be established amongst the Business Division, the Open Learning Institute and the Knowledge Network. c) A Core Curriculum for diploma level Business programs must be developed and mutually adopted by BCIT and the colleges. d) Faculty exchanges amongst colleges and institutes should be implemented. e) A better sharing of faculty resources among the universities, colleges, OLI and KNOW and across a wider range of technological and management programs is essential.
11. BCIT has been asked for input to secondary school physics program. BCIT works closely with the Ministry's Coordinator of Career Preparation Programs.		

EDUCATIONAL GOALS	TASK FORCE REPORT ON TECHNOLOGICAL TRAINING IN ENGINEERING, HEALTH SCIENCE & RELATED FIELDS	BCIT RESPONSE	COMMITTEE TO CONSIDER EXTENDING TECHNOLOGICAL TRAINING BEYOND 2 YEARS AT BCIT.
12. The Institute will initiate investigations into the feasibility of carrying out applied research. It will ensure that such research will be of benefit to the Institute, the students and to BCIT's instructional programs.			The contribution by BCIT be limited to faculty and facilities which meet the prime objectives of the Institute. Ministry funding not be provided for such activities.
			SIZE 6,000 students would be an approximate enrolment limit, at least for the forseeable future. Target population for 1984/85 - in the realm of 4,500 students. SPACE Conversion of space for the near future, additional buildings for long term requirements and additional housing will be considered through the normal funding channels.

BCIT RESPONSE/COMMENTS	BCIT RECOMMENDATIONS	BCIT BUSINESS DIVISION TASK FORCE RECOMMENDATIONS
11. Educational Council established a Task Force which is preparing a report which will lay out the benefits and liabilities.		
6,000 is a realistic target population. BCIT should be encouraged to increase its student population to the level identified by industry, but keeping in mind the approximate enrolment limit set by the committee. Where demand is such that this limit should be exceeded, we urge the Minister to support our proposals. Agree	SIZE BCIT's ultimate enrollment be 6,000 students. Student enrollment in Bachelor of Technology programs be approximately 10% of total enrollment.	
We urge the Minister to approve and obtain borrowing authority for a) preliminary planning of new buildings at BCIT. b) the next phase of the student residence so that the necessary planning can be done immediately.		SPACE We recommend against relocation of the Business Division from the Burnaby campus because it could have an adverse impact on the Division as a comprehensive entity, and on the Health Care and Engineering industry part-time student population.

II. Provincial Economic Recovery Programs[2]

According to Premier Bill Bennett, British Columbia has the most comprehensive restraint program in the country, having cut $400 million from this year's budget. Some of the cost-cutting measures include the cancellation of Denticare, a ceiling on salary increases and reductions in the areas of health and education.

There are three major plans to the provincial government's recovery program: mortgage relief, job creation and job retention. The government's objective is to stimulate and develop programs which will enhance the economy by enabling people to work, own their own homes, and function as consumers.

One deliberate strategy of the recovery program is to broaden the province's economic base by shifting away from the heavy dependence on the resource industries. Labor Minister Bob McClelland views the Headstart on High Technology program as a response to diversifying the B.C. economy. This program features low-interest funding for advanced technology industries.

Recently a three part $200 million program called Low Interest Funding Today was announced by Don Phillips, Minister of Industry and Small Business Development. The program is designed to create and preserve "thousands" of jobs during the next two years. The first component

2. Source: B.C. Business Magazine, Recovery: Program Architects, Vol. 10 No. 8, October 1982

TABLE 20

Prime Recovery Programs

Program:	For:	Contact:
Small Manufacturers Development Assistance	1,2,3	B
Notes: New, untried. **Finance:** Interest-free forgiveable loans for capital expenditures; stackable with other B.C. programs; if new facilities, lesser of 50% of Eligible Capital Cost or $30,000; if new related facilities, or if modernization or expansion of existing operations, lesser of 30% of ECC or $18,000. Half of loan forgiven on first anniversary, balance on second anniversary if conditions met. **Conditions:** Applicable anywhere in B.C. **Comments:** BCDC is familiar with program thrusts, but may be procedural bugs.		
BC Small Business Development Fund	1,2,3	A
Notes: New, untried. Unlike usual programs for modernization, expansion or development of production facilities because also allows application for 'replenishment' of working capital. **Comments:** BCDC staff familiarity is good, but may be procedural bugs. **Conditions:** Priority to B.C. owned/operated firms with 75% or more of assets and employees in province, demonstrated need for capital caused by recession and good prospects in normal times. **Finance:** Up to $1 million available, estimated interest rate about 2% below prime, payable monthly, fixed for mandatory 3-year term but principal payments can be tailored. Security, 'if available' likely mortgage of realty debenture secured by company fixed assets and principal shareholder guarantees.		
Low Interest Loan Assistance	1,2,4	A
Notes: For modernization, expansion or new facilities. **Conditions:** applicant's total tangible equity to tangible asset ratio must be 15% or more on a pro-forma basis. **Finance:** Up to 33.3% of fixed asset capital costs between $30,000 and $200,000. Interest rate is half BCDC's normal rate which floats just above prime; term is three years. No accrued interest during first six months and usually no principal re-payments during first year. Loan term is lesser of asset's economic life or 25 years, but no penalties or bonus incurred if repayment occurs earlier. **Comments:** Considerable scrutiny of project and proponents can occur. Applicable anywhere in B.C.; older program being re-financed.		
Apprenticeship Training	5	D,C
Notes: New, untried. **Conditions:** applies only to apprentices collecting unemployment benefits. **Finance:** apprentices receive $25 weekly training incentive payment for up to six months — stackable on UIC — plus double-time credit towards ticket for doing 'simulated' on-job conditions in 'co-operative' umbrella of colleges, unions and employers. **Comments:** Employer participants expected to provide equipment for work. Other conditions still being formulated. Considerable potential for procedural bugs; Labour Ministry administration.		
Women in Non-Traditional Employment	5	D,B
Notes: New, untried. **Finance:** provides subsidies to companies willing to train women in 'non-traditional' occupations. **Comments:** Being organized under a new Women's Office in Labour Ministry; procedural bugs expected but expected substantial attention will be paid since new Deputy Minister involved.		
Small Business Investment Grant	5	D,E
Notes: New, untried. **Finance:** provides 'grant' to borrowers via interest rate 'rebate' that effectively has Federal government paying 4% of borrower's interest rate — to his bank — on two-year-term loans between $10,000 and $500,000 that are used for either acquisition of new, depreciation-producing assets or R&D financing. **Comments:** Except for 'grant', usual bank procedures and conditions apply. Application deadline: April 1, 1983.		
Canadian Off-Shore Market Development	6,7	B,C,F
Notes: Third five-year phase of 11-year-old program well liked by COFI. **Comments:** for off-shore market development of B.C. softwood lumber, plywood and 'related' wood products. Phase to concentrate on fully-manufactured-product export market development.		
Headstart on High Technology	2	B
Notes: New, untried, incentives for R&D and high-tech manufacturing, including low-interest funding. **Comments:** Expanded legislation expected in spring; essentially off-shoot of BC SMDF for now.		
Employment Bridging Assistance	6	B,C,F
Notes: New. **Conditions:** for unemployed forestry workers only. **Finance:** payments are made by program directly to worker, UIC-stackable. **Comments:** considerable procedural bugs due to coverage by two provincial and two federal departments, including Canada Manpower which must refer all participants; projects limited to lesser priority programs such as stand-tending and site-rehab because only projects that do not prompt other lay-offs or interfere with union jobs allowed. No limitation to the types of companies 'sponsoring' a project. Program expiry is March 31, 1982.		
'Special' Agriculture and Rural Development	8	B,F
Notes: Program is essentially 18-month extension (to March 31, 1984) of existing ARDA. **Conditions:** funding assistance available for Native B.C. people starting companies, undertaking activities such as farming, fishing or trapping, but also assists project-related 'infrastructure', training, and 'community development' projects in remote areas. Program is regarded as helpful but inefficient.		

Key: 1 — Manufacturing and Processing; 2 — High-tech; 3 — Resource-related transportation; 4 — Providers of related services; 5 — Non-discriminatory; 6 — Forestry; 7 — Exports; 8 — Agriculture.

A — BC Development Corporation, 689-8411, provincial; B — Ministry of Industry and Small Business Development, 689-4411, provincial; C — Department of Regional Industrial Expansion, 666-1434, federal; D — Ministry of Labour, 387-6575, provincial; E — chartered banks; F — Council of Forest Industries, 684-0211.

Source: B.C. Business, Vol. 10, No. 8, October 1982, p.29

OIP 1031
82:12

of the program is the Small Manufacturers Development Assistance which provides interest-free, forgiveable loans of up to $30,000 for new facilities and up to $18,000 for equipment (See Table 20 for an overview of prime recovery programs). The second program is Low Interest and Loan Assistance. Loans of up to $200,000 are available for manufacturing, processing or high-technology companies wishing to modernize, expand or establish new facilities. The third program is the Small Business Development Fund which provides fixed-interest loans for manufacturing, processing, high technology and resource-related transportation companies wanting to modernize, expand, establish new facilities or improve their working capital positions.

The Cabinet Committee on Employment Development was established to stimulate new employment opportunities consistent with building the long term economic base of the province. There are currently three job-creation programs: The Forest Industry Employment Bridging Assistance Program is designed for those receiving unemployment insurance. These individuals work on various forest management projects in exchange for which they receive the difference between what they get in unemployment insurance and a maximum amount of $300 a week. The Community Recovery Program allows communities to apply for funds for improvement projects. The Winter Employment program is designed to create up to 8,000 jobs in such areas as tourism; agriculture and high technology industries. Eligible participants are young people, those on income assistance and those whose unemployment insurance benefits are expiring.

Job training programs which help prepare people for a changing job market are also being planned. One example is the on-the-job training program for unemployed apprentices using the facilities of college campuses, private trade schools and other premises. Retraining has become the new approach to employment.

The provincial recovery program cannot pretend to be a cure for the economy, which is dependent upon factors external to B.C. What it does hope to accomplish is to produce programs which will help keep people employed until there is a turnabout. The way to turning the economy around, according to Grace McCarthy, is to instill confidence in the consumer. The job programs and the mortgage assistance plan are designed to give people more confidence in their financial situation, encouraging them to spend more and thereby stimulate the provincial economy.

III Science Policy

The Science Council of British Columbia recently presented the Provincial Government with a series of recommendations concerning research and development activity in B.C.[3] In reviewing the present economic situation, the Science Council determined that the application of technology is a key factor to increasing industrial growth and efficiency. Such application would improve the competitive position

3. Science Council of British Columbia, A Research and Development Policy for British Columbia in the Eighties, November 1982

and profitability of existing industries and encourage the expansion of industry into new areas thereby stimulating the provincial economy. Increased support for scientific and engineering research and development was seen as essential to the application of new technology. Accordingly, the following policy recommendations were formulated:

1. Increase support for research and innovation (grants; increased funding; loans).

2. Improve environment for business activity and investment (tax deductions/incentives; deregulation; limited partnerships).

3. Promote research of importance to the province; particularly in areas with economic or social benefit and areas with an existing base of expertise.

    a) Agriculture and food - plant genetics, hydroponics, greenhouse technology and biological control systems.

    b) Aquatic Sciences and mariculture - ocean engineering.

    c) Biotechnology and bioengineering.

    d) Computer software and technology - process control and CAD/CAM.

    e) Electronics and communications - telecommunication, earth surveillance and electronic remote sensing.

    f) Energy - biomass.

    g) Environment - health and safety.

    h) Forestry and Forest Products - silviculture and preservation and improvement.

    i) Health Care - nuclear medicine and advanced diagnostic techniques.

    j) Manufacturing - improved productivity particularly processing industries.

    k) Mining and mineral processing - biotechnology, electrolysis and electrowinning.

1) Transportation.

4. Train scientific and technical manpower (graduate and doctoral training for HQM in local industry; post-secondary training for primary and secondary industry; encourage entry-level employment for newly-qualified technologists).

5. Assist innovators and new business ventures (establish Innovation Office for technical assistance).

6. Use government policy to support B.C. industry and research (use local suppliers of scientific goods and services; promote B.C. participation in international provision of goods and services).

7. Support location of major scientific facilities in B.C. (TRIUMF cyclotron; Long Baseline Array radiotelescope; CAD/CAM centre and biotechnology research centre).

8. Coordinate Government/University/Industry research activities (collaborative programs; coordination of policy and information; Internal Research Advisory Committee).

9. Encourage public awareness of benefits of science and research (science centres, public events, education).

10. Provide suitable locations for technology-based industry (like Discovery Parks).

11. Support cultural and social amenities (to attract business).

Conclusions

1. Provincial policy, whether for education or economic recovery, emphasizes the recurrent theme of budgetary restraint. Though future funding levels for technological education have yet to be established, it can safely be assumed that substantial increases will not be forthcoming through conventional channels.

2. An obvious priority that has been assigned to the post-secondary education system is the provision of training to fill areas of critical skill shortages, particularly in technological fields. Information on skill shortages and needs is proposed to be used as the basis for determining educational program priorities. BCIT's ability to maintain its responsiveness to labor market requirements through the development of new and innovative training programs will determine the strength of the Institute's position within the provincial post-secondary education system. The capacity to implement priority programs in a short time frame could have substantial implications for future funding.

POST-SECONDARY SYSTEM

I. Organization[1]

The British Columbia College and Institute System has been evolving for nearly 20 years. In 1960 the Federal government passed the "Technical and Vocational Training Assistance Act" which provided joint funding for technical and vocational schools. By 1961 the Provincial government announced plans to build BCIT and by 1964 the Institute was operational. In 1965 Vancouver City College (now Vancouver Community College) was established. In the succeeding decade, more colleges were established throughout the province, funded by a local tax base and government-operated vocational schools were merged with community colleges.

Subsequently, five additional institutions were established - The Emily Carr College of Art, the Justice Institute of B.C., The Open Learning Institute, the Pacific Marine Training Institute and the Pacific Vocational Institute. The Institute of Technology Act was passed in 1974, converting BCIT into a board-governed institution. Provincial funding of colleges became a reality when the College and Provincial Institutes Act was passed. The three council governance system was established and one of the first colleges (Douglas) was split into two separate institutions. New types of delivery systems for education were implemented with the establishment of the Open Learning Institute and the Knowledge Network of the West.

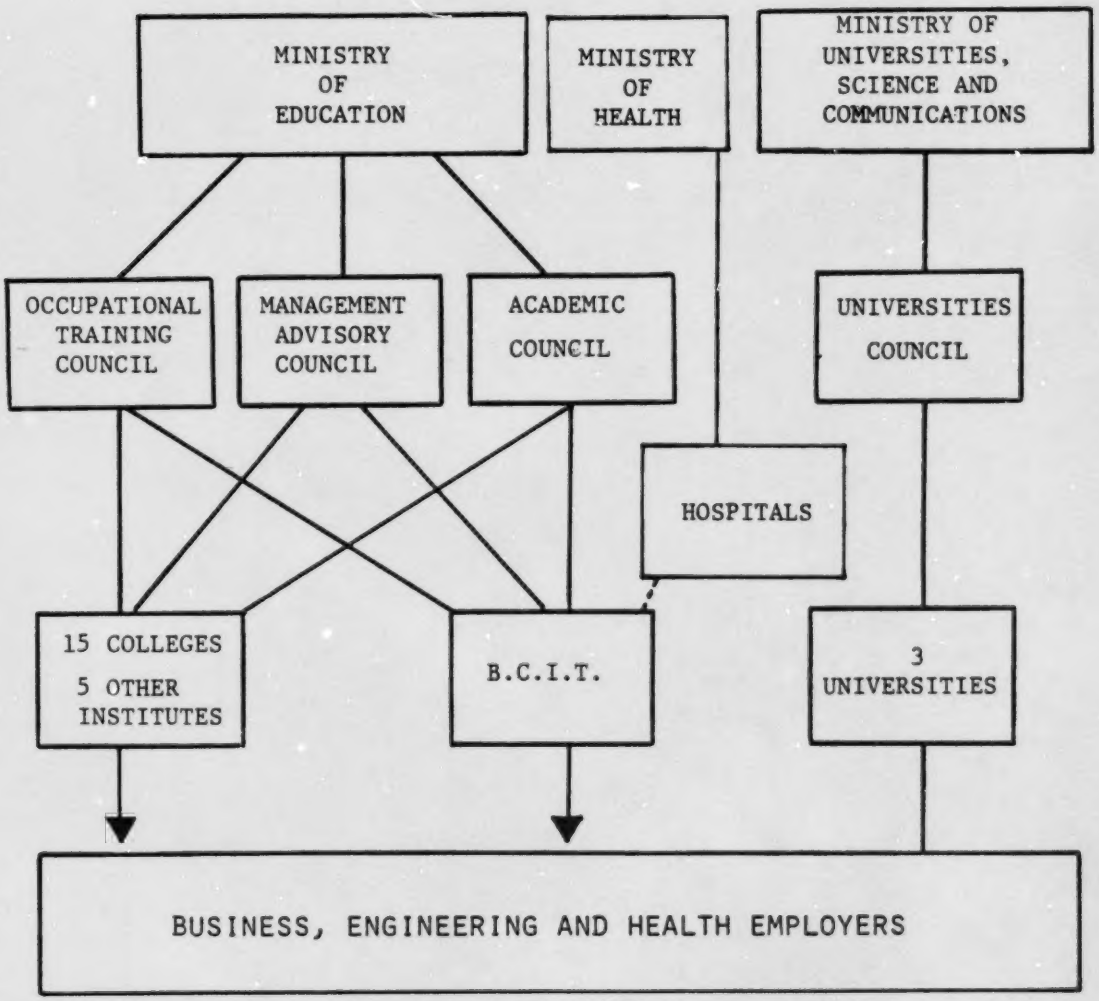
1. B.C. Ministry of Education, Post-Secondary Department, Integrated Five Year Planning for the B.C. College and Institute System, 82:11:05

The complex post-secondary system that has evolved consists of two ministries, four councils and 24 separate institutions, all working to the common end of providing educational opportunities throughout the province. Figure 9 depicts the current organizational structure. The Ministry of Health has been included due to the substantial impact it has on health education. The provincial government is presently considering a change in the role of position of the councils, presumably in an effort to better coordinate and/or simplify the existing structure.

The funding mechanism for the system further complicates the situation. The Federal government provides financial support to the province for post-secondary education under Established Programs Financing and other categorical programs such as the National Training Act, research and development activities, and student loans. The provincial government, which has jurisdiction over post-secondary education, provides funds through the ministries. These funds are channelled to the various councils for allocation to the institutions. Recently there have been extensive discussions on the federal/provincial front in relation to possible changes in the transfer funding formula agreement (EPF). On the provincial level, the concept of formula funding for B.C. colleges and institutes is being considered.

FIGURE 9

ORGANIZATION OF BUSINESS, ENGINEERING & HEALTH EDUCATION
AT THE POST SECONDARY LEVEL IN BRITISH COLUMBIA



That which is manifest is that the post-secondary system is facing substantial changes. This is further compounded by the pervasive climate of budgeting restraint and multiple pressures for increased accountability. Educational priorities are shifting, constitutional jurisdiction is being questioned and organizational structure is under review. The college and institute system must be sufficiently flexible to adjust to change and sufficiently innovative to cope with budget reductions while preserving the quality and integrity of post-secondary education.

II. Financial Policy[2]

The Standing Committee on Financial Policy of the B.C. Council of College and Institute Principals have produced, in draft, a position statement on financial policy for the purpose of identifying changes that have the potential to improve the Provincial College and Institute System's cost effectiveness. The following recommendations related to the budget process and temporary funding procedures are presented in this document:

1. That the Minister establish a system through which each institution would be advised of the total amount of funds (ongoing as well as temporary) available to it from the provincial government at least for months before the start of each fiscal year, such information to be conditional on final approval of estimates by the legislature.
2. That the College and Provincial Institute Act be amended to allow each board to distribute funds allocated to it in the most equitable manner within the institution, taking into account institutional and provincial priorities.
3. a) Ideally, the concept of planned T.F.C.'s should be eliminated, and funds that would be allocated for such courses should be distributed through the normal operating budget. Where external agencies purchase seats in such courses, these

2. This section adapted from:
B.C. Council of College and Institute Principals, Position Statements on Financial Policy, October 1982.

could be identified, to ensure that no unilateral cancellation could take place. Inclusion of such courses in the regular operating budget is understood not to be a guarantee of funding in future years.

b) In the event that a) is not feasible, a block of funds for planned T.F.C.'s should be allocated to each institution. Such T.F.C.'s would be identified in the budget submissions as they are now, but would not require the submission of individual T.F.C.'s to release the funds. There would be "after the fact" reporting of all enrolment and cost data.

4. Institutions should be provided with a block of funds for emergent needs, to be allocated according to locally identified priorities, with "after the fact" reporting as described earlier. It is understood that such block funding will not become part of the ongoing budget.

5. Overhead and support costs must be recognized as legitimate components of all temporary funded courses (planned or emergent).

6. Data relating to all temporary courses (planned or emergent) should be fully included in all P.A.C. reports related to actual Expenditures.

7. Activities should not be funded on a temporary basis beyond a three year limit. At that point, if the need continues, funding should come from the regular ongoing budget.

The concept of formula funding was also discussed within the report. The purpose of this section was not the formulation of recommendations but rather to identify general principles that ought to govern any serious consideration of formula funding for B.C. colleges and institutes.

A budget formula system should assist, not replace, the institutional management process. The following conditions should be satisfied before implementation of such a system:

1) All data elements and procedures should be fully disclosed.
2) The formula should allow for predictability of funding; the rules should not be changed frequently. The system should facilitate the process of multi-year planning.
3) The formula should not be used to force internal allocation decisions. This does not preclude the designation of some funds to specific programs where such programs have been publicly identified as having a provincial or national priority.
4) A reliable data base must be fully developed (we are moving towards this goal, but are not there yet).
5) An incremental, rather than average, formula is preferred.
6) The formula should not be based on "% of base factor" (a fixed ratio of one functional activity to another), since this approach discourages innovation and the exercise of legitimate management rights to change established staffing patterns.

7) There should be equality of funding for comparable types and levels of programming, subject to size factors.

8) The higher unit costs of small institutions and multi-campus operations must be recognized.

9) If the base is found to be too high or too low for a given institution, adjustments to the base should be phased in through a policy which limits grant reductions or increases to any one institution to 10% in any one year (after allowance for inflation), subject to sufficient lead time.

10) A ceiling on increases in grants to the system in any one year may have to be established to prevent open ended commitments that government may be unable or unwilling to fund.

11) The need for funding beyond the formula must be acknowledged in certain circumstances.

Conclusions

1. The college and institute system in B.C. is being challenged to respond to significant changes. National and provincial policy emphasize that educational program priorities should be based on fulfilling the occupational skill needs of the economy. Meanwhile, fiscal policy remains exceedingly restrictive and greater attention is being paid to both accountability and cost-effectiveness. Plainly, the system is being asked to do more with less, requiring innovative approaches and flexible programming.

2. Changes are being proposed in both the organizational structure of the system in the method of allocating funds. A single council structure has been recommended for the purpose of coordinating and streamlining the allocation process. It is not known whether this would enhance or detract from BCIT's role in providing specialized technological training since no office within the Ministry or the council structure has the responsibility to promote technological education.

3. Interest in formula funding continues to be expressed. Since qualitative aspects are not taken into consideration while equitability is, this could adversely effect BCIT's funding level due to the higher cost of Institute programs.

THE NEW TECHNOLOGY AND ITS IMPLICATIONS

I. The Microelectronics Revolution

The integrated microelectronic circuit, known as the chip, has revolutionized technology and is transforming society. The Science Council refers to it as a "transformative technology", one that permanently alters human thought and action. In ten short years the chip has spread through the economy at a rate of seven to ten times faster than that of any previous technology. The power of the chip has increased a hundred-fold over the past decade while its costs have dropped a thousand-fold. At no time in history has there been a broader range of innovations and technologies based on a single invention. It has brought with it the benefits of increased speed and reliability, improved energy efficiency and portability.

Microelectronics has provided the foundation for a wide range of rapidly growing new technologies and applications are continuously expanding. These technologies encompass such developments as computer-assisted design (CAD), computer-assisted manufacturing (CAM), robotics, digital signal processing, packet switching, speech processing, expert

1. This section adapted from the following sources:
Labour Canada Task Force on Micro-Electronics and Employment, In the Chips: Opportunities People Partnerships, Minister of Supply and Services Canada 1982, Cat. No. L35-1982/1E,

Science Council of Canada, Planning Now for an Information Society: Tommorrow is Too Late, Minister of Supply and Services, March 1982 Cat. No. SS22-1982/33E

systems and opto-electronics (lasers, optical discs and optical computers). This has resulted in sweeping changes and great productivity gains in such areas as communications, record-keeping, word processing, and the design and production of manufactured items.

The experimental rate of development in the field of microelectronics will continue and the rate of change will accelerate. Some predictions for the future are presented in the Science Council report "Planning for an Information Society". These include:

1980-85
- Semiconductor chips contain up to 300,000 transistors giving each chip the power of a mainframe computer.
- All automobiles use microelectronic controls to boost engine efficiency.
- Some 10 percent of homes have computers or terminals with access to remote data bases, mainly through the telephone but also via two-way cable television and satellite communication.

1985-90
- Semiconductor chips hold one million transistors. Each chip has the power of the biggest IBM System 370 computer.
- All autos are equipped with microcomputers to warn when preventive maintenance is needed and automatically diagnose problems.
- One-third of all homes have computers or terminals. In the office, electronic mail rivals paper mail in volume.
- Robots and "smart" machines with microelectronic sensors replace significant numbers of factory workers.

- Microelectronic implants begin controlling sophisticated new artificial organs, such as hearts.

- Most doctors install computer-assisted diagnostic systems in their offices.

- Most banks are interconnected through a computer network.

- Schools turn to extensive use of computer-aided learning.

2000

- Chips contain 10 million transistors. Each chip has more computing power than is installed today at most corporation.

- "Smart" highways for semiautomated driving enter early development.

- Most homes have computers. Data communications volume exceeds voice volume, and video phones enter the home.

- Robots and automated systems produce half of all manufactured goods. Up to one-quarter of factory workers may be dislodged.

- Microelectronic implants restore sight, hearing and speech.

- Computer-assisted medicine extends into the home.

II. Impact on Employment

In order to survive in the world market it is essential for Canada to take advantage of the massive productivity gains promised by the microelectronics revolution. In doing so, whole classes of unskilled and semi-skilled occupations will face obsolescence as new technologies are applied in every place where labor-intensive activities now predominate.

Structural unemployment will thus become an increasingly critical problem. Women, middle managers and workers in manufacturing industries will be the first to feel the impact. Automation in the clerical area will have a significantly adverse affect on employment opportunities for women. Industrial automation will result in a dramatic decrease in labor requirements in manufacturing. The role of middle management is being reduced by the new technologies which have the capability to centralize information and change the focus of decision making. Many of these adverse effects can be resolved through retraining. The cost of re-education could be as high as 5% of GNP on a continuing basis. But, the cost of non-participation in the new technologies could be far greater, with more permanent unemployment, a decline in living standards and increasing emigration.

Though job displacement will occur in some sectors, employment will increase in all areas of computer design and applications. It is predicted that more than half a million jobs will be created during the next 10

years in the microelectronic-based high technology field, with a growth rate of 20% per year. The hardware area will need skilled people with electrical engineering backgrounds, while the software area will require skills in control, production and operational systems.

It is unknown whether the extent of job creation will off-set the impact of job destruction. Proponents of productivity argue that net employment should actually increase while labor supporters counter that large sectors of the labor force will experience massive lay-offs, particularly women and older workers. It is necessary that viable transition process be implemented that will promote flexibility and adjustment to change, compiled with training and educational emphases that will better prepare individuals for effective entry to development in the new labor markets.

III. Impact on Women

Women currently make up more than forty percent of the labor force, and their participation is projected to progressively increase over the medium-term. Historically women have been located in "job ghettos" - the clerical, sales and service occupations - which are characterized by low-income positions with relatively little opportunity for advancement. The service industries employ over 80% of all women in the labor force, with at least one-third concentrated in clerical occupations.[2] Up to two-thirds of these occupations are currently prime targets for efficiency and productivity improvements via the introduction of microelectronic technology. In addition to facing displacement due to the adaptation of the new information technologies, women continue to experience traditional occupational segregation and discrimination based on sex and age.[3] Unless women move away from traditional jobs into demand-oriented occupations, they will face severe structural unemployment in the 1990s.

In recent years, there has been some movement of female workers

2. Economic Council of Canada, In Short Supply: Jobs and Skills in the 1980's, Minister of Supply and Services Canada 1982.

3. Labor Canada Task Force on Micro-Electronics and Employment, In The Chips: Opportunities, People, Partnerships, Minister of Supply and Services, 1982.

into managerial and professional occupations. The proportion of women in these occupations grew by 12.5% between 1975 and 1980. Also, the proportion of women in natural science occupations increased by 13.1% between 1975 and 1980. Nonetheless, occupational concentration by sex and persistent overall wage differential between the sexes testifies to the real lack of progress.[4] Despite the fact that demand continues to be great for many high-level, blue collar skills, trainees in such occupations remain almost exclusively male. Socialization patterns and traditional sex stereotyping persist in exerting a strong influence on the training and employment of women.

In an effort to address these problems, the federal government recently instituted a Non-Traditional Training for Women program. This program will fund 75% of the wages of women being trained in generally male-dominated occupations. Unfortunately, the funding allocation is insufficient to meet the extent of need.

Additional consideration has been given to the issue of the employment of women by various task forces. Recognizing that the microchip could result in an unemployment rate of up to 35% for female clerical workers by 1990, the Task Force on Micro-Electronics and Employment recommended that immediate attention be given to:

4. Economic Council of Canada, In Short Supply: Jobs and Skills in the 1980's, Minister of Supply and Services Canada 1982.

" (a) Strengthening progressive hiring, training and promotion policies by appropriate legislation, to help ensure that women are not disproportionately affected by technological change;

(b) providing special opportunities for upgrading women's educational qualifications for admission to training and re-training programs and for entry to apprenticeship programs. These special opportunities are needed particularly by women entering the labor force for the first time and by older women re-entering the labor force."[5]

The Parliamentary Task Force on Employment Opportunities for the '80s addressed the employment problems of women, resulting in the following recommendations:

" 1. In order to encourage women to enter non-traditional areas of work, and employers to hire them, there should be a national advertising and publicity program showing women working in non-traditional fields. This should be supplemented by the use of pamphlets, texts, audio-visual presentations, and other methods, and used in schools and other areas where there are counselling services.

2. With the rapid introduction of microtechnology and word processors, there could be increased unemployment among women who work in offices. It is therefore imperative that governments plan special programs for the retraining and upgrading of these women to fill the new jobs that will be opening in the '80s and '90s.

3. Governments should facilitate shared and part-time work, so that women who wish to stay at home on a part-time basis will also be able to work on a part-time basis. This is important for keeping up their skills and trades for the work place, as well as for earning necessary additional income.

---

5. Labor Canada Task Force on Micro-Electronics and Employment, In The Chips: Opportunities, People, Partnerships, Minister of Supply and Services, 1982

4. Governments should examine the feasibility of giving women credit for work done and skills acquired in running a household when they enter educational training programs." [6]

Most recently, a report by the Canada Employment and Immigration Advisory Council examined the issue of new technologies and their impact on employment. The Council's review resulted in a specific recommendation relating to the employment of women.

"Employment and Immigration Canada should assume a more aggressive role in improving women's participation in non-traditional occupational areas by:

- Alerting Canada Employment Counsellors to the importance of making information available to women on employment opportunities in non-traditional occupational areas;
- purchasing basic introductory courses and industrial and technical courses for women;
- providing access to generic skill courses to women outside the labor force, women working part-time and displaced women; and by
- purchasing a Computer Literacy Program to orient women toward occupations in the field of technology." [7]

6. Parliamentary Task Force on Employment Opportunities for the '80s, Work for Tomorrow, 1981.

7. Canada Employment and Immigration Advisory Council, Employment Impacts of New Technologies, December 1982.

In sum, there is obvious attention being given to the problems of women in the labor force, but this is regrettably accompanied by very little progress to date. The federal government's National Industrial Training Program is responsive, albeit limited, in that it will provide financial incentives to employers who will train women in critical skills. As traditional "female" occupations disappear, women must persist in strengthening their position in the labor force by taking advantage of training and employment opportunities in the new technologies in order to counter skill obsolescence and job displacement. Society, in turn, must be re-educated to accept the new role of women in the work place.

IV Impact on Education

Training and education are vital to a smooth social transition from a consumer/industrial age to an information/technological age. Canada's society must become computer literate or risk the ability to compete internationally. Educational systems must be redesigned to keep pace with technology and with changes in society in general. Individuals need to be trained for the jobs and professions which will replace activities made redundant by the new technologies.

Educators and educational institutions have a major role to play in supplying skilled workers for high-technology industries. Educational institutions will be challenged to meet the need to retain workers and managers for the variety of new skills required in an information society. The growing skill and technical labor requirements of microelectronic technology calls for a greater adaptive flexibility to be built into all levels of training and education - from pre-elementary to post-graduate university level. Major curriculum changes will have to occur, with computer literacy a scientific education being incorporated into the basic goals of the education system. Full exposure to the many facets of hardware and software, as well as training in conceptualization, must be provided for all students.

Education must address not only the evolution of the younger, computer-educated, generation but also the training needs of the older, existing labor force. Changes in microelectronics should be anticipated and retraining opportunities provided while still retaining workers. Ongoing learning will become a necessary feature and new ways must be developed in order to deal effectively with the non-traditional learners. This comprehensive approach requires that government employers and educators undertake a massive effort to devise a cooperative education process that will both dispell the ignorance surrounding the new technologies and provide training in the positive use of microelectronic equipment. Failure to do so could reduce Canada's chances to gain both full employment and economic growth.

IV. Science Council Recommendations

In its analysis of the impact of the microelectronics revolution on society, the Science Council's theme was plan now because "tomorrow is too late". Accordingly, the recommendations formulated were based on a spectrum of needs ranging from the importance of heightened awareness to requirements for immediate action. The following summarize some of the many statements of concern:

1. Rigidities in funding mechanisms for education should be removed so that highly-qualified people will be available in sufficient numbers. Both federal and provincial governments should develop capital and operating programs that will increase funding for education in the computer-related fields.
2. The use of computer-aided learning (CAL) is increasing, and with it the demand for courseware. Teachers should be encouraged to participate in authoring courseware for CAL, thereby involving them in the development process.
3. To avoid creation of an information-poor class of society, governments should adopt national policy aimed at increasing computer literacy among the public (i.e. proliferation of videotex terminals in public libraries).
4. Health care is being revolutionized through the application of the new technologies. Health care providers, educational institutions and funding sources must be sensitive to the changes in this field, and their potential benefits to, in particular, the disabled and those suffering from degenerative diseases.

5. Governments, educational institutions, the media and business must be involved in increasing public awareness of the problems and opportunities inherent in the transition to an information society in order for Canadians to understand and master the new technologies.
6. The First Ministers of the government of Canada should create an advisory committee on the new information technology to act as an authority on technological trends and make policy recommendations.
7. A new national research institute should be established for the development of advanced systems and applications of software associated with the theory and practical use of the new technologies.
8. The diffusion of the technologies throughout Canadian industry should be facilitated, particularly in the manufacturing sector where microelectronically controlled machines will be utilized.
9. Canada must ensure that the resource industries are aware of the role the new technologies can play in improving productivity, particularly in extraction and processing.
10. To maintain a healthy economy, Canada must maintain its status as a world leader in geophysical exploration, remote sensing and the use of sophisticated electronic techniques to identify new resource areas.
11. Federal and provincial governments should embark on a large scale introduction of Telidon into their own operations to increase computer literacy among users.

12. "Centres of excellence" need to be established to ensure the development of expertise in robotics so that policy makers and planners can determine the extent to which robots can/should be built domestically or imported.

13. In developing new programs to support research and development activity, industry and government must recognize the relative importance of software.

14. Industry and government should collaborate to develop and maintain a custom silicon-chip design and manufacturing capability.

15. Government procurement policies should be designed to provide strong support for Canadian high-technology companies and should be standardized to ensure system compatibility.

Conclusions

1. Canada cannot afford to forgo the productivity gains promised by the microelectronics revolution. Canada's future as an internationally competitive force is contingent upon its adaptation of the new technologies. The degree to which the nation is successful will depend upon its ability to meet the technological skill needs of the future and to adjust to a rapidly changing information society. Training and education are the primary vehicles by which these objectives can be attained.

2. While skill shortages are already manifest in the new technologies, job displacement will occur at an increasingly rapid rate in sectors with labor intensive activities. Massive retraining of the impacted segments of the labor force will be required to correct this imbalance.

3. Educational institutions need to re-examine their curricula and priorities in order to respond to society's needs for large numbers of highly trained technologists. Software skills are currently in great demand, and the demand will grow for graduates who can program individual applications as well as design systems.

LABOR RELATIONS

During 1982 the Federal government introduced the "6 and 5" wage restraint program in an effort to control inflation. This program sets the rate of growth of nominal wages for Federal employees at 6 percent in 1983 and 5 percent in 1984. Even though the restraint policy applies only at the Federal level it is having a dampening effect on salary levels in general. Other levels of government and the private sector are effectively negotiating lower wage settlements utilizing the "6 and 5" guidelines as an example.

The British Columbia provincial government has imposed upper limits in salary increases for public-sector employees. The guidelines provide a "basic protection factor" which for the first year is 10 percent. For the second year of the program the inflation protection factor will be the average percentage increase in the Consumer Price Index measured in Vancouver for the preceding 6 months. Also included is an "experience adjustment factor" allowing a maximum of 2 percent (plus or minus) for the first year, based on past compensation experience and historical relationships. The third component is a "special circumstances factor" which provides a maximum of two percent for circumstances such as increases in labor productivity, manpower or skill shortages, or compensation for training made necessary by technological change.

The current recession has also had a significant effect on labor relations. Whereas in the past the focus had been on the distribution of wealth, there is now evidence of a shift toward job protection and creation. Many companies are on the verge of bankruptcy and widespread layoffs are occurring at an alarming rate. Even unions have reduced the level of service to their members.[1] Industry is urging labor to recognize at the bargaining table that companies will take years to regain their economic health.

The B.C. Government Employee's Union master agreement with the Provincial government expired this summer. Initial negotiations broke down and two province-wide strikes ensued. By October the collective agreement was settled under a 15 month contract with provisions for a 6.8% wage increase. Details of the contract are still in the process of being finalized.

BCIT's collective agreement with the B.C.G.E.U. Local 59 expired on September 30, 1982. Negotiations opened with some 54 issues in dispute including increased work week, decreased vacation and a one year freeze on wages. The Union's wage demand is for a 14% increase. Since no progress had been made on monetary issues, in particular, in the first eight bargaining sessions, a government supervised strike vote was called and supported. A mediator was appointed by the Ministry

1. Employer's Council of British Columbia, Industrial Relations Bulletin, Vol. 14 No. 48, 82:11:30

of Labor to assist with negotiations but no settlement has been achieved to date. Job action is still pending. Furthermore, BCIT's collective agreement with the Staff Society expires on December 31, 1982. It is not known what direction negotiations will take with this local agreement.

Conclusions

1. The wage restraint program and the recessionary economy have resulted in generally lower wage settlements. Concern is shifting more toward job security than large salary increases.

2. Negotiations with BCIT unions will continue into 1983. Wage issues will be difficult to resolve, resulting in a prolonged bargaining process.

BIBLIOGRAPHY

B.C. Central Credit Union, Economic Analysis of British Columbia, Economics Department, Vol. 2, No. 7, 1982:11:16

B.C. Council of College and Institute Principals, Position Statements on Financial Policy, October 1982.

BCIT College Statistical Report as at 1981:10:31 - "Enrollment by Age, Sex and Enrollment Status" (1981-82 Statistics)

B.C. Ministry of Education, Post-Secondary Department, Integrated Five Year Planning for the B.C. College and Institute System, 82:11:05.

B.C. Ministry of Finance, Financial and Economic Review, 42nd Edition, August, 1982.

B.C. Ministry of Labor, British Columbia Labor Forces Statistics, October, 1982, Special report, Research and Planning, Program Services Branch, 387-5071.

British Columbia Post Secondary Education Enrollment Forecasting Committee, Trend Analysis of Enrollments and Participation Rates in British Columbia Post Secondary Education 1967-1980, Report #37 (December 1981) and preliminary tables, 1981 Enrollments, 82:11:22

Brown, D. and Poiker, T.N., Plans and Profile Characteristics of Grade 12 Students in British Columbia 1981, British Columbia Post-Secondary Education Enrollment Forecasting Committee, Report #40, July 1982.

Canada Employment and Immigration Advisory Council, Employment Impacts of New Technologies, December 1982.

Central Statistics Bureau, Ministry of Industry and Small Business Development, British Columbia Population Projection 9/82: 1981-2006, Government of British Columbia, September 1982.

Conference Board of Canada, Quarterly Canadian Forecast, Medium-Term Outlook, Applied Economic Research and Information Centre, Executive Summary, October 1982.

Economic Council of Canada, In Short Supply, Job and Skills in the 1980s, Cat. #EC22-108/1982E.

Economic Council of Canada, Lean Times, Policies and Constraints, Nineteenth Annual Review, 1982., Catalogue No. EC21-1/1982E.

Employer's Council of British Columbia, Industrial Relations Bulletin, Vol. 14 No. 48, 82:11:30.

Financial Post, Jobless at Crisis Point - But Aid Is Pricey, 82:10:09

Forrester, G., Jones, G. and Dennison, J., B.C. Research, Appendix Report #1, Information Sheet Responses by Institution/BCIT, #5-04-982, February 1982.

Government of Canada, Economic Development for Canada in the 1980's, November 1981.

Hughes, Mike, Recovery: Program Architects, B.C. Business Magazine, Vol. 10 No. 8, October 1982

Labor Canada Task Force on Microelectronics and Employment, In the Chips: Opportunities, People, Partnerships, Minister of Supply & Services Canada 1982, Cat. NO. L35-1982/1E

Lloyd, G.N. et al, Task Force on Marketing Strategies for Recruitment at B.C.I.T., BCIT February, 1982.

Ministry of State, Science and Technology Canada, Science Notes, Fall 1982 Vol. 1 No. 3.

Moyan, Peter "The Feds: So That's What Ottawa Thinks", B.C. Business Magazine, Vol. 10, No. 8, Oct 1982

National Research Council of Canada, The Urgent Investment - Year Two, 1982, p.20

Parliamentary Task Force on Employment Opportunities for the '80s, Work for Tomorrow, 1981.

Planning Department, Greater Vancouver Regional District, Greater Vancouver Growth Prospects, Trends and Forecasts, October 1982.

Science Council of British Columbia, A Research and Development Policy for British Columbia in the Eighties, Nov. 1982.

Science Council of Canada, Planning Now for an Information Society: Tomorrow is Too Late, Minister of Supply and Services, March 1982 Cat. No. SS22-1982/33E

Statistics Canada, 1981 Census of Canada, Population - Age, Sex and Marital Status, Ca. No. 92-901 (Vol. 1 - National Series)

Statistics Canada, 1981 Census of Canada, Population - Geographic Distributions, British Columbia, Cat. No. 93-910 (Vol. 2 - Provincial Series).

Statistics Canada, Trends in Canadian Education, 1961-62 to 1983-84, Education, Science and Culture Division, September 1982.

ERIC Clearinghouse for Junior Colleges
8118 Math-Sciences Building
University of California
Los Angeles, California 90024
JUL 27 1984